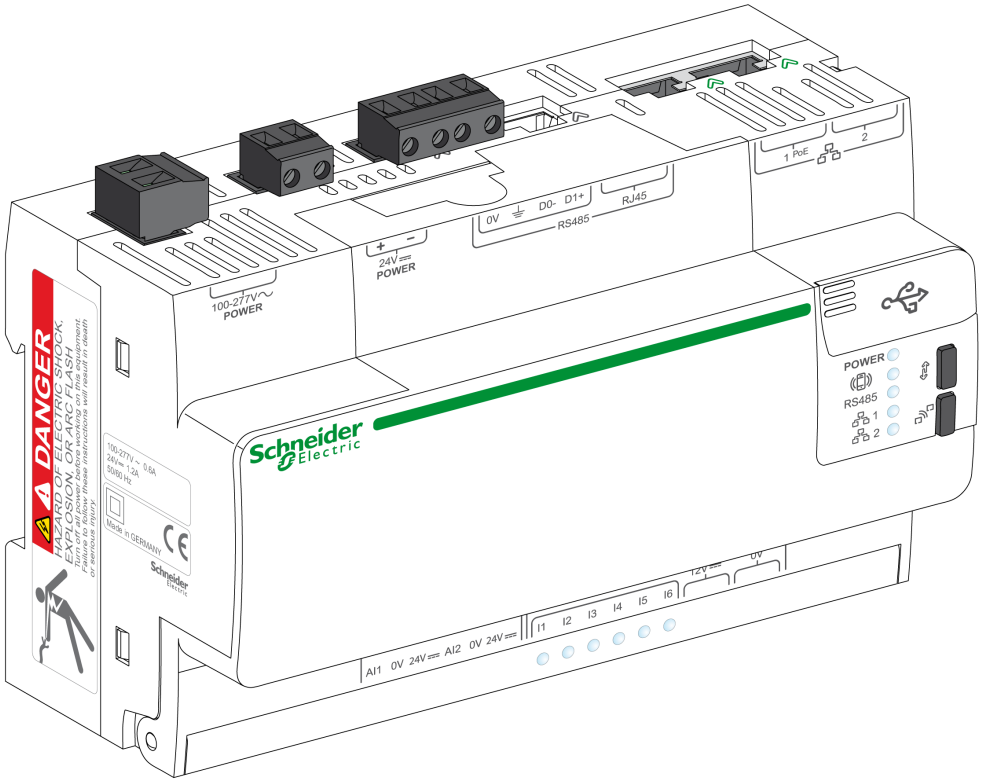
Com'X 200

Metering and Data Acquisition System
Installation Guide

03/2014



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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

BEFORE YOU BEGIN

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠ WARNING

UNGUARDED MACHINERY CAN CAUSE SERIOUS INJURY

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only the user can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine; therefore, only the user can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, the user should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

START-UP AND TEST

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

⚠ CAUTION

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in injury or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

OPERATION AND ADJUSTMENTS

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Book

At a Glance

Document Scope

This document provides instructions for installing and setting up the metering and data acquisition system using a Com'X 200 as the main data aggregator of the system.

The instructions are presented in the order in which they are to be carried out. They supplement the assembly or installation documents supplied with the equipment and the specific installation guides for each product.

The installation guide presents general wiring rules, recommendations about wireless network, installation recommendations of the Com'X 200, and cabling schemes of devices connected to a Com'X 200:

- monitoring devices and electrical equipment
- Modbus RS 485 / Ethernet TCP/IP communication gateway
- GPRS modem
- Wi-Fi modem
- maintenance
- checklist
- troubleshooting and diagnostics

This guide is intended for the electrical contractor or integrator in charge of installing and configuring the energy management solution.

Validity Note

This user manual applies to the energy server Com'X 200 device.

The energy server Com'X 200 is a compact plug and play data logger. It collects and stores consumptions of WAGES (water, air, gas, electricity, and steam) and environmental parameters such as temperature, humidity, and CO_2 levels in a building. Data is securely transmitted as a report to **StruxureWave Energy Operation** or any other Internet database server.

Related Documents

Title of Documentation	Reference Number
Acti 9 Communication System User Manual English, French, Italian, Portuguese, Spanish	DOCA0004
Com'X 200 Instruction Sheet English, French, Italian, Spanish	253534170
Com'X 200 Instruction Sheet German, Dutch, Portuguese, Russian, Chinese	253537642
Com'X 200 User Guide Chinese, English, French, German, Italian, Portuguese, Spanish	DOCA0036
DigitAN EM6400 Series User Manual English	DigitAN EM6400 Series_UserManual
EBXA-GPRS Instruction Sheet English, French, Italian, Spanish, German, Dutch, Portuguese, Russian, Chinese	253537613
EBXA-GPRS-SIM Instruction Sheet English, French, Italian, Spanish, German, Dutch, Portuguese, Russian, Chinese	253537621
EBXA-USB-WI-FI Instruction Sheet English, French, Italian, Spanish, German, Dutch, Portuguese, Russian, Chinese	253537634
Electrical Installation Guide (Wiki version)	www.electrical-installation.org
EM3500 Series DIN Rail Meter Technical Data Sheet English	PLSED310037EN

Title of Documentation	Reference Number
EM3502, EM3550 Compact Power and Energy Meter Installation Guide English	ZL0092-0A
EN40P Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	AAV74173
How to Assemble an Electrical Switchboard Technical Guide	DESW043EN
iEM2000T Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1A89364
iEM2010 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B45381
iEM3110 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46581
iEM3150, iEM3155 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46583
iEM3210 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46598
iEM3250, iEM3255 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46602
ME1ZR Instruction Sheet Chinese, Czech, Danish, Dutch, English, Finnish, French, German, Hungarian, Italian, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish	0GHE40035A-03/1
ME3ZR Instruction Sheet Chinese, Czech, Danish, Dutch, English, Finnish, French, German, Hungarian, Italian, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish	0GHE40036A-03/1
ME4ZR Instruction Sheet Chinese, Czech, Danish, Dutch, English, Finnish, French, German, Hungarian, Italian, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish	0GHE40037A-03/1
Modbus Communication for Circuit Breakers CompactNSX, CompactNS, and Masterpact NT/NW Circuit Breakers English, French	COM-LVP38EN COM-LVP38FR
PM9C Instruction Sheet English, French, Italian, Spanish	GHE12248AC
PM9P Instruction Sheet English, French, Italian, Spanish	GHE12246AC
PM710 Reference Manual English	63230-501-209
PM750 Installation Guide English, French	63230_507_200A1_EN 63230_507_202A1_FR
PM3210 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46605
PM3250, PM3255 Instruction Sheet Chinese, English, French, Italian, Portuguese, Spanish	S1B46607
PM5100, PM5110, PM5111 Instruction Sheet Chinese, English, French, German, Italian, Portuguese, Russian, Spanish	HRB32897-01
PM5310, PM5320, PM5330, PM5331, PM5340, PM5341 Instruction Sheet Chinese, English, French, German, Italian, Portuguese, Russian, Spanish	HRB69887-01
PM5560 Instruction Sheet Chinese, English, French, German, Italian, Portuguese, Russian, Spanish	HRB14027-01
PM5561 Instruction Sheet Chinese, English, French, German, Italian, Portuguese, Russian, Spanish	HRB14028-00
PM5563 Instruction Sheet Chinese, English, French, German, Italian, Portuguese, Russian, Spanish	HRB16844-01

Title of Documentation	Reference Number
PowerLogic Ethernet Gateway EGX100 Installation Guide Chinese, English, French, Spanish	63230-319-239 ZH 63230-319-200 EN 63230-319-202 FR 63230-319-201 ES
PowerLogic EGX100 User Guide English, French, Spanish	63230-319-204
PowerLogic Ethernet Gateway EGX300 Installation Guide Chinese, English, French, Spanish	63230-319-233 ZH 63230-319-212 EN 63230-319-214 FR 63230-319-213 ES
PowerLogic Ethernet Gateway EGX300 User Guide English, French, Italian, Spanish	63230-319-216
PowerLogic ION6200 Power and Energy Meter Installation & Operation Guide English, French	70002-0196-10
PowerLogic ION7300 Series User Guide English	70002-0162-05
PowerLogic PM500 Series Quick Reference Guide English, French, Spanish	51112563AE_EN 51112563AE_FR 51112563AE_ES
PowerLogic PM800 Series Quick Reference Guide English	3000DB0808
PowerLogic Power Meter 200 and 200P Installation Guide English, French, Spanish	63230-510-209 EN 63230-510-210 FR 63230-510-211 ES
PowerLogic Power Meter 210 Reference Manual English	63230-510-205
PowerLogic Power Meter PM5350 User Guide English	63230-401-203
PowerLogic Series 800 Power Meter Ethernet Communications Card User Guide English, French, Spanish	63230-506-204
PowerLogic Series 3000 Circuit Monitor Reference Manual Chinese, English, French, Spanish	63230-400-207A1 EN
PowerLogic Series 4000 Circuit Monitor Reference Manual Chinese, English, French, Spanish	63230-300-212B1 EN
PowerLogic System Catalog English	PLSED309005EN
Smart Interface Module Installation Guide English	DOCA0025EN
Varlogic NRC12 Power factor controller User manual English	3653493EN_01.indd

You can download these technical publications and other technical information from our website at www.schneider-electric.com.

Part I
Data Acquisition System Presentation

Chapter 1
Description

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Com'X 200 Functionality Overview	16
Architecture Interfaces Characteristics and Limits	18

Com'X 200 Functionality Overview

Data Acquisition System

The data acquisition system (DAS) based on a Com'X 200 allows acquisition of WAGES (Water, Air, Gas, Electric, Steam) data at customer site, and send them to a hosted platform such as Schneider Electric StruxureWare Energy Operation.

The Com'X 200 can collect:

- Consumption data from meters with pulse signal output directly connected to the Com'X 200 digital inputs, via SIM10M (Modbus serial line connection) modules, or Smartlink (Modbus serial line.)
- Status of contactors, impulse relays, or TOU (Time Of Use) contacts of a main electrical meter.
- Data from devices connected to Modbus RS 485 network of the Com'X 200.
- Data from devices connected to Modbus RS 485 network of the EGX100 or EGX300 (for large buildings).
- Data from devices connected to Ethernet TCP/IP.
- Environmental data (temperature, humidity, CO_2, and so on) from sensors directly connected to the Com'X 200 analog inputs, via SIM10M modules.

Logging and Sending Data

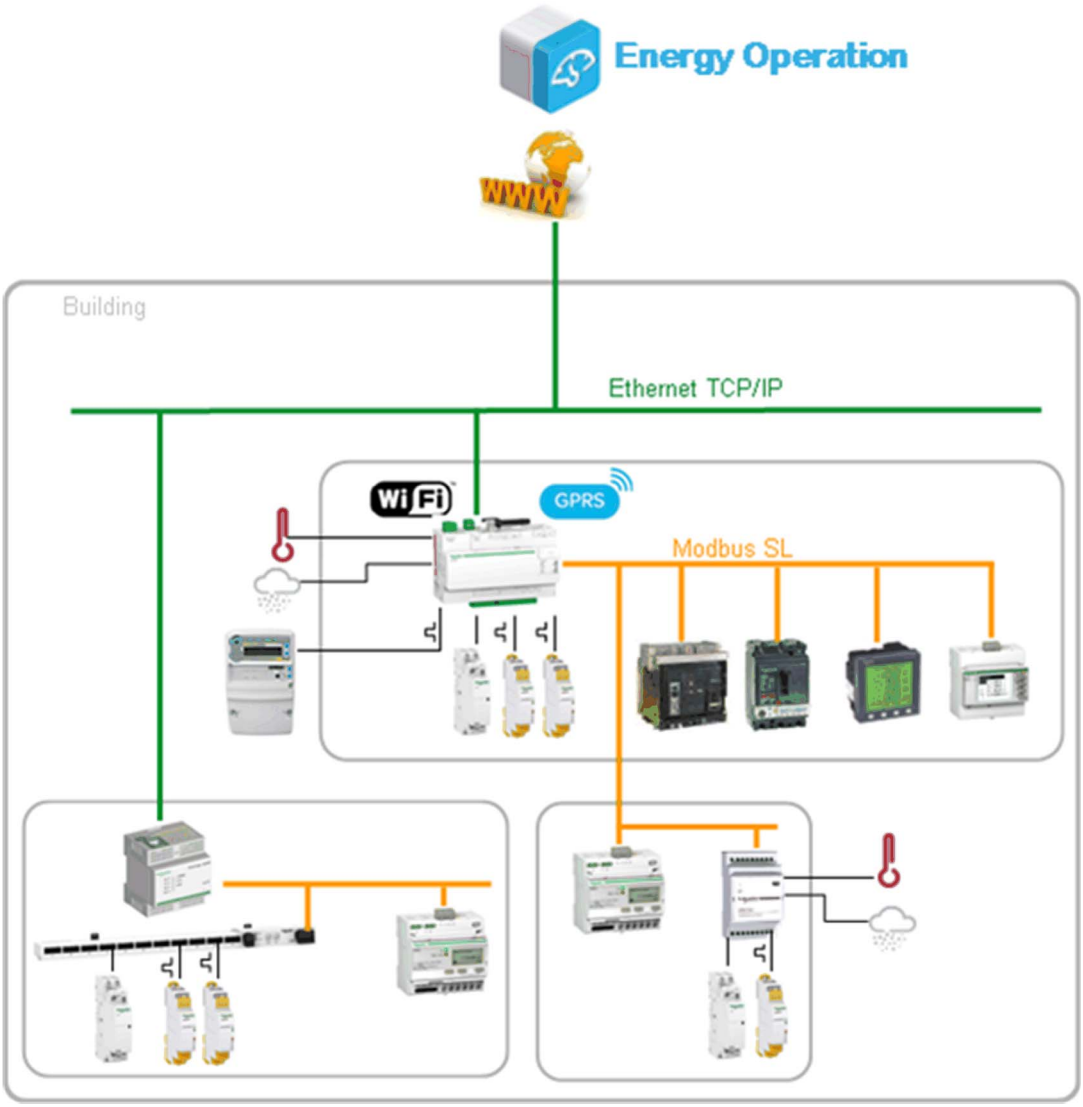
The Com'X 200 can log data at intervals from 1 to 60 minutes.

This data can be sent to Schneider Electric StruxureWare Energy Operation through:

- Ethernet network
- Wi-Fi
- GPRS for isolated sites or sites where the IT administrator does not allow access to the network infrastructure.

Com'X 200 Connections

The graphic summarizes the connections presented above:



Architecture Interfaces Characteristics and Limits

Characteristics and Limits

Device	Interface	Characteristic/Limit Description	Values
Com'X 200	Modbus port (master)	Max number of Modbus slaves	20 including energy meters, SIM10M, Acti 9 Smartlink, Modbus gateways (M-Bus, TIC)
		Max bus length	1200 m in daisy chain
		Transmission speed supported (bits/sec)	• 1200 • 4800 • 9600 • 19200 (factory setting) • 38400 • 57600 • 115200
		Parity	• Even (factory setting) • Odd • None
		Stop bits	• 1 (factory setting) • 2 (if non parity)
		Auto-discovering address range	1...255 (1...10 by default)
	Ethernet ports	Max number of devices attached	20 Ethernet devices attached maximum including Ethernet gateways
		Transmission speed	10/100 Mbits/s
		Ethernet ports configurations supported	• 2 separate ports (1 IP address each) • 2 switched ports (1 IP address for both)
		2 separate ports (1 IP address each)	• Upstream network DHCP client • Static IPV4 address
			• Downstream network DHCP server with fixed IPV4 address (10.25.1.1) or static IPV4 address • DHCP client
		2 switched ports (1 IP address for both)	• DHCP client • Static IPV4 address
		Modbus TCP auto-discovering	• Automatic • Manual
	Modbus and Ethernet	Max number of devices attached through Modbus and Ethernet mixed	60 devices
	Analog inputs	Number of inputs	2
		Input types supported	0...10 V, 4...20 mA, Pt100 and Pt1000
		Equipment types supported	T° sensor, Humidity sensor, CO2 sensor, Level, and Generic
	Digital inputs	Number of inputs	6
		Input type supported	Counter, Square, Status, and Run hours
		Equipment types supported	Generic main meter, pulse meters, KYZ meters, contactor status, impulse relay status

Device	Interface	Characteristic/Limit Description	Values
Ethernet gateways	Modbus port (master)	Max number of Modbus slaves	20 including energy meters, SIM10M, Acti 9 Smartlink, Modbus gateways (M-Bus, TIC)
		Transmission speed supported (bits/sec)	• 2400 • 4800 • 9600 • 19200 (factory setting) • 38400
		Parity	• Even (factory setting) • Odd • None
		Stop bits	• 1 (factory setting) • 2 (if non parity)
SIM10M	Analog inputs	Number of inputs	2
		Input types supported	0...10 V externally powered
	Digital inputs	Number of inputs	6
		Input type supported	Pulse acquisition and On/Off detection by internal 3.6 Vdc power and pull-up resistors
Acti 9 Smartlink	Digital inputs	Number of inputs	22 (2 x 11)
		Input type supported	Pulse counter, Status, and Run hours
TWIDO WAGES solution	Digital inputs	Number of inputs	12...44
		Input type supported	Pulse counter

Part II
Wiring Rules and Recommendations

What Is in This Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
2	Wiring Rules	23
3	Wiring of the Modbus Communication Network	27
4	Wiring of the Ethernet Communication Network	35

Chapter 2
Wiring Rules

Safety Instructions

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Wiring Overview	24
24 Vdc Power Supply Category	25

Wiring Overview

Wiring Rules

NOTICE
COMMUNICATION MALFUNCTION Respect all the wiring and grounding rules to avoid communication malfunctions due to EMC disturbance. **Failure to follow these instructions can result in equipment damage.**

The following wiring rules must be respected in order to reduce disturbance due to EMC on the behavior of the Com'X 200:

- Keep a distance as large as possible between the communication cable and the power or control cables (minimum 30 cm or 11.8 in.). If it is not possible, insulate communication cable with:
  - metallic tubing
  - metallic trunking
- Cross over the Ethernet cable and the power cables at right angles, if necessary.
- Install the communication cables as close as possible to the grounded plate.
- Do not bend or damage the cables. The minimum bending radius is 10 times the cable diameter.
- Avoid sharp angles of paths or passage of the cable.
- Use the recommended cables only.
- Use shielded cables only:
  - The cable shield must be connected to a protective ground.
  - The connection of the cable shield to the protective ground must be as short as possible.
  - Connect together the shields, if necessary.
  - Perform the grounding of the shield with a collar.
- Add filters on contactor coils for all contactors and relays.
- Wire the bus between each connector directly, without intermediate terminal blocks.
- The common polarity (0 V) must be connected directly to protective ground, preferably at 1 point only for the entire bus. In general, this point is chosen either on the master device or on the polarization device.

For more information, refer to the *Electrical Installation Guide* (available in English only), chapter *ElectroMagnetic Compatibility (EMC)* and the *How to Assemble an Electrical Switchboard Technical Guide*.

24 Vdc Power Supply Category

Selection of a 24 Vdc Power Supply in the Data Acquisition System

The 24 Vdc power supply must comply with the following criteria:

- It must be located in the electrical cabinet.
- It must be different from the Modbus network 24 Vdc power supply to maintain galvanic isolation between the Modbus network (common to several electrical cabinets) and the 24 Vdc I/O.
- It must be Safety Extra Low Voltage (SELV) type.
- Galvanic isolation between the power supply input (AC voltage) and the power supply output (DC voltage) must be at least 4 kVAC at 50 Hz.
- The rated AC voltage of the power supply input must be 240 Vac +15/-20%.
- This power supply can be used to supply other products inside the electrical cabinet provided that these products are double insulated or with reinforced insulation to preserve the power supply SELV quality. Phaseo ABL8MEM240xx (OVC II) or ABL7RM24025 (OVC II) modular power supplies and their accessories comply with the above recommendations. These accessories provide the redundancy and backup power supply functions and can eliminate micro-cuts on the line.The upstream and downstream protection functions of the Phaseo power supply must be installed as indicated in their respective manuals.

If overvoltage category IV or III is needed in the installation, we recommend using:

- Either power supplies (limited to 1 A) in the ULP (Universal Logic Plug) system with product references 54440 to 54445. See the User's Manual, ULP Connection System, product reference TRV99100.
- Or use the Phaseo power supply recommended above, protecting it with an isolating transformer from the Phaseo Optimum (ABL6TS) range or the Universal (ABT7PDU) range.

NOTE: Refer to the respective manuals for each of these power supplies.

Chapter 3
Wiring of the Modbus Communication Network

Overview

This section describes how to connect a Com'X 200 on a RS 485 Modbus network with an RJ45 or an open-style connector.

It presents 2 possible network topologies.

What Is in This Chapter?

This chapter contains the following topics:

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Modbus Network Characteristics	28
Modbus Communication Port Wiring Terminal Characteristics	31
Wiring the Modbus Network	32

Modbus Network Characteristics

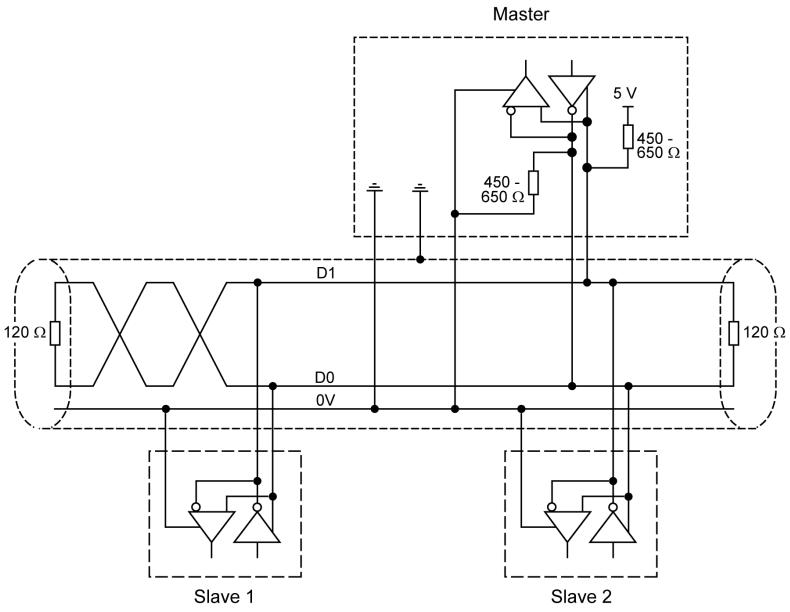
Overview

The *Modbus over Serial Line Specification and Implementation Guide*, published on www.modbus.org, defines the characteristics of the Modbus protocol over serial line. The Com'X 200 complies with this specification.

Modbus Network Standard Diagram

The standard diagram corresponds to the Modbus specification on the www.modbus.org site and in particular to the 2-wire multidrop serial bus diagram.

The simplified diagram is as follows:



Characteristics for Connection to the RS 485 Bus

The RS 485 standard allows variants of some characteristics:

- polarization
- line terminator
- number of slaves
- bus length

Characteristics	Standard Value	Com'X 200 Value
Maximum number of slaves (without repeater)	32 slaves	20 slaves
Type of trunk cable	Single, shielded, twisted-pair cable, with 120 Ω characteristic impedance, and at least a third conductor	Same as standard value
Maximum bus length	1,300 m (4,300 ft) at 19,200 Baud	1,000 m (3,300 ft) at 115 kBaud
Maximum length of tap-offs	Depends on the transmission rate	• 20 m (66 ft) for 1 tap-off • 40 m (131 ft) divided by the number of tap-offs on the multiple junction box
Bus polarization	• A 450...650 Ω pull-up resistor at the 5 V • A 450...650 Ω pull-down resistor at the common	• 510 Ω pull-up resistor at the 5 V • 510 Ω pull-down resistor at the common **NOTE:** These polarization resistors are integrated in the Com'X 200

Characteristics	Standard Value	Com'X 200 Value
Line terminator	Line terminator at both ends of the bus (R or RC)	A 120 Ω resistor +/- 5% at both ends of the bus
Common polarity	The common polarity is connected to the protective ground in at least 1 point on the bus.	Same as standard value

Modbus Communication Port Wiring Terminal Characteristics

General

The main physical characteristics of a Modbus port are:

Physical interface	Multipoint 2-wire RS 485 - electrical networking
Connector	Terminal block and RJ45
Polarization	Integrated

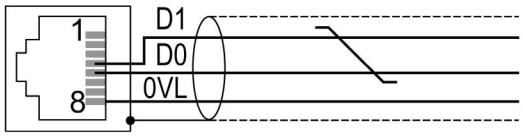
Physical Interface and Connectors

Refer to the Com'X 200 physical description for connectors layout. *(see page 50)*

RJ45 Connector Pinout

The Com'X 200 is connected to the Modbus network with a shielded RJ45 connector in compliance with the following wiring:

Front view



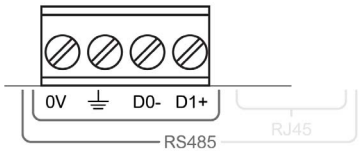
The RJ45 wiring layout is:

Pin no.	Signal	Description
1	–	Not connected
2	–	Not connected
3	–	Not connected
4	D1+	Transceiver terminal 1
5	D0-	Transceiver terminal 0
6	–	Not connected
7	–	Not connected
8	0VL	Signal and power supply common

Open-Style Connector

Connect the Com'X 200 to the Modbus network with an open style connector in compliance with the following plug-in terminals and pin assignments.

Plug-in terminals



Pin assignments

Signal	Description
0V	Signal and power supply common
⏚	Modbus shield pin
D0-	Transceiver terminal 0
D1+	Transceiver terminal 1

Wiring the Modbus Network

Overview

It is recommended to connect a Com'X 200 to a Modbus network on the RS 485 bus with the female shielded RJ45 connector.

This section describes 2 typical cases of connection of the Com'X 200 to the bus:

- With an open-style connector.
- With an RJ45 connector.

Modbus Wiring Rules

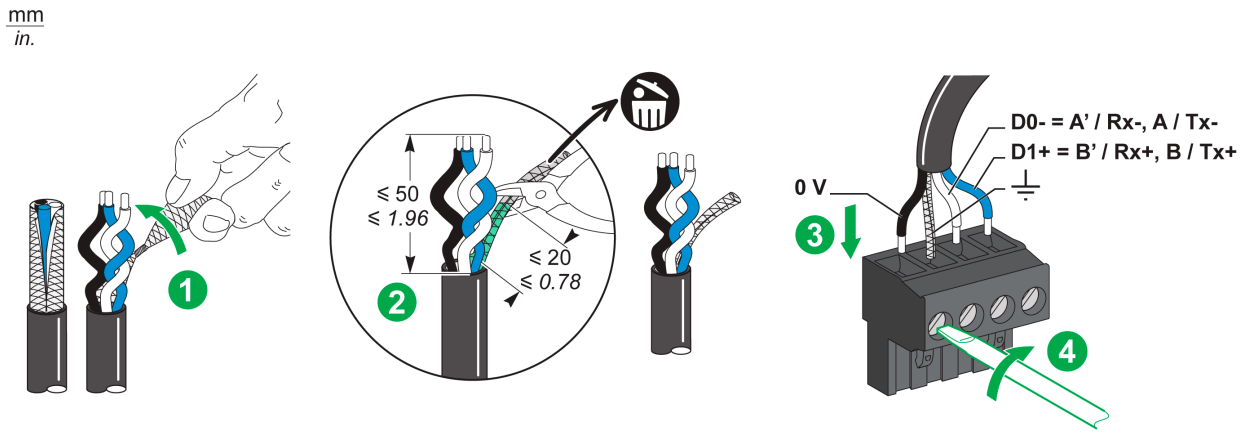
Apply all general wiring rules *(see page 24)*.

NOTICE
COMMUNICATION MALFUNCTION Place a line terminator at each end of the bus to avoid malfunctions on the communication bus. Respect all the wiring and grounding rules in order to avoid communication malfunctions due to EMC disturbance. **Failure to follow these instructions can result in equipment damage.**

NOTE: A line terminator is integrated in the Com'X 200 and can be activated through the web interface if the Com'X 200 is located at 1 end of the Modbus line.

For more information, refer to the *Electrical Installation Guide* (available in English only), chapter *ElectroMagnetic Compatibility (EMC)*.

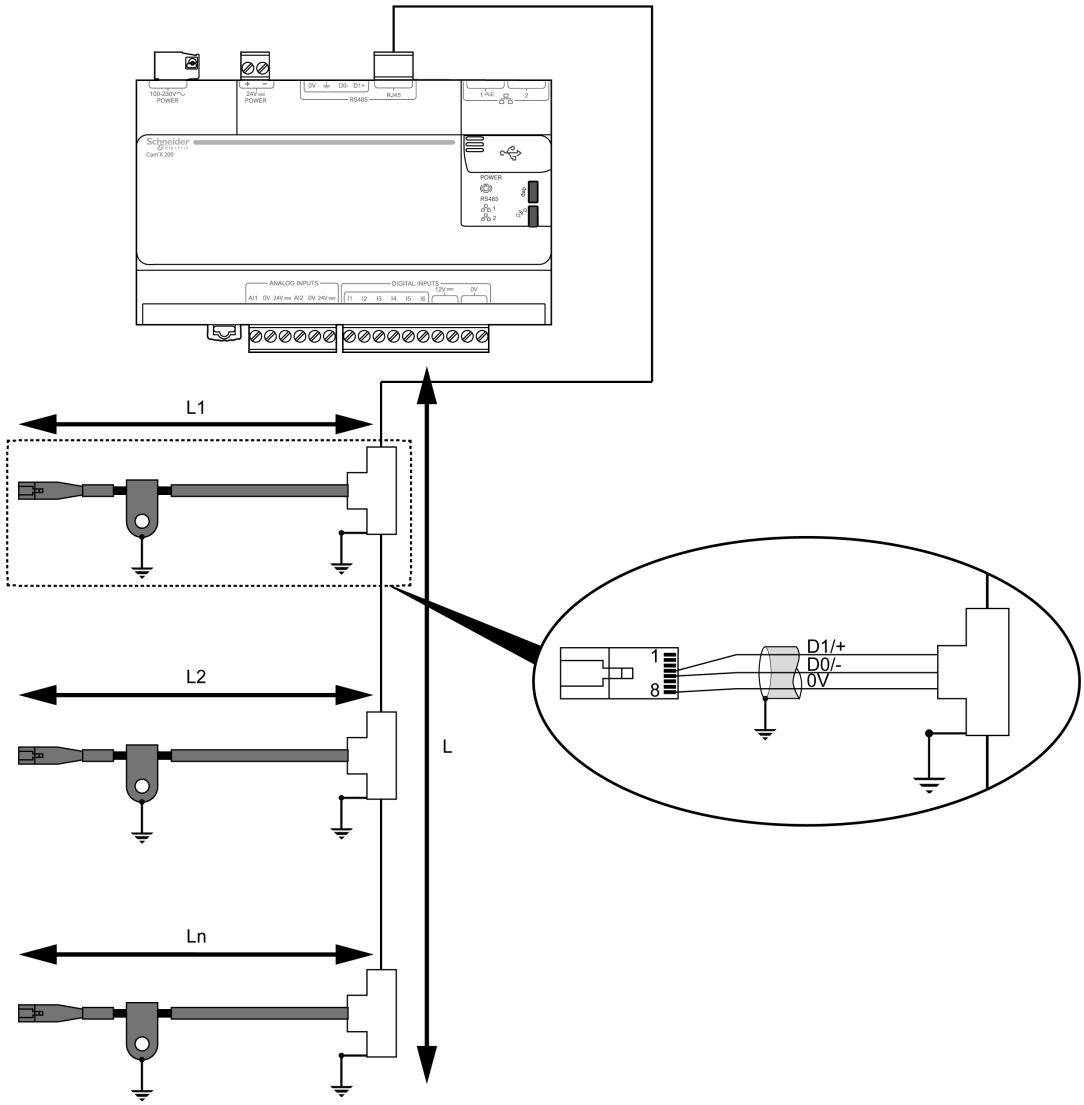
Open-Style Connector Wiring Rules



NOTE: Add a heat-shrink sleeve at the end of the stripped cable shield to regroup metallic strands.

Connection of the Com'X 200 via its RJ45 Connector

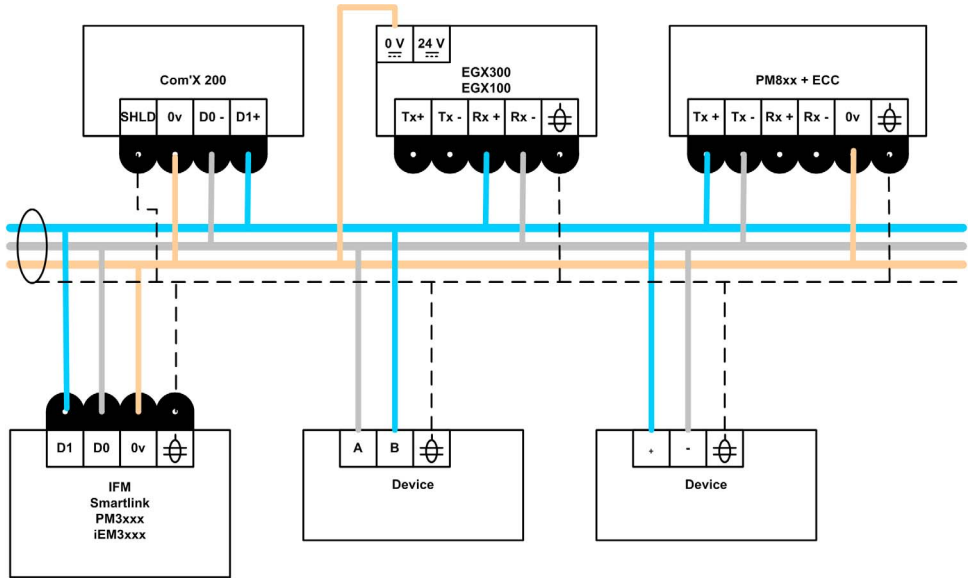
The wiring diagram for connecting the Com'X 200 installed in an enclosure to the RS 485 bus via the RJ45 connector is as follows:



1 Master (PLC, PC, or communication module) with line terminator
2 Modbus shielded cable with 2 RJ45 connectors
3 Grounding of the Modbus cable shield
4 Modbus T-junction boxes VW3 A8 306 TF•• (with cable)
5 Grounding of the Modbus T-junction boxes
6 Line terminator for RJ45 plug VW3 A8 306 R (120 Ω)

Connection of the Com'X 200 via the Open-Style Connector

The wiring diagram for connecting the Com'X 200 installed in an enclosure to the RS 485 bus via the open style connector is as follows:



Inverting pin A, –, Tx–, Rx–, D0
Non-inverting pin B, +, Tx+, Rx+, D1
Reference pin SC, G
Shield sh, shld

List of Modbus Accessories

Designation	Description	Reference Number
T-junction boxes	Box with 2 RJ45 female connector for trunk cable and an integrated 0.3 m (1 ft) cable with 1 RJ45 male connector for tap-off	VW3 A8 306 TF03
	Box with 2 RJ45 female connector for trunk cable and an integrated 1 m (3.2 ft) cable with 1 RJ45 male connector for tap-off	VW3 A8 306 TF10
Line terminator for RJ45 connector	R = 120 Ω	VW3 A8 306 R
Line terminator for open-style connector	R = 120 Ω	VW3 A8 306 DR

List of Modbus Cables

Designation	Length	Reference Number
Shielded cable for Modbus bus, with 2 RJ45 connectors	0.3 m (1 ft)	VW3 A8 306 R03
	1 m (3.2 ft)	VW3 A8 306 R10
	3 m (9.8 ft)	VW3 A8 306 R30
Shielded cable for Modbus bus, with 1 RJ45 connectors and 1 stripped end	3 m (9.8 ft)	VW3 A8 306 D30
Shielded cable for Modbus bus, with 2 stripped ends	100 m (320 ft)	TSX CSA 100
	200 m (640 ft)	TSX CSA 200
	500 m (1,600 ft)	TSX CSA 500
Belden cable or equivalent	305 m (1,000 ft)	3107A
	305 m (1,000 ft)	7201A
	305 m (1,000 ft)	9842

Chapter 4
Wiring of the Ethernet Communication Network

Overview

This section describes how to connect a Com'X 200 to an Ethernet network using an RJ45 connector.

It presents 2 possible connection modes.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Ethernet Network Characteristics	36
Ethernet Network Port Wiring Terminal Characteristics	37
Wiring the Ethernet Network	38

Ethernet Network Characteristics

Overview

The Com'X 200 complies with the Ethernet standard specification.

Characteristics for Connection to the Ethernet Network

Characteristics	Standard Value	Com'X 200 Value
Type of cable	Depends on the transmission rate	Straight or crossed category 5 shielded twisted-pair
Maximum cable length	100 m (328 ft)	Same as standard value
Transmission speed	10 MB/100 MB	Same as standard value

Ethernet Network Port Wiring Terminal Characteristics

General

The main physical characteristics of an Ethernet port are:

Physical interface	Ethernet 10/100BASE-T
Connector	RJ45

Physical Interface and Connectors

Refer to the Com'X 200 physical description for connectors layout. *(see page 50)*

Wiring the Ethernet Network

Overview

This section describes 2 typical cases for connecting a Com'X 200 with the RJ45 connectors:

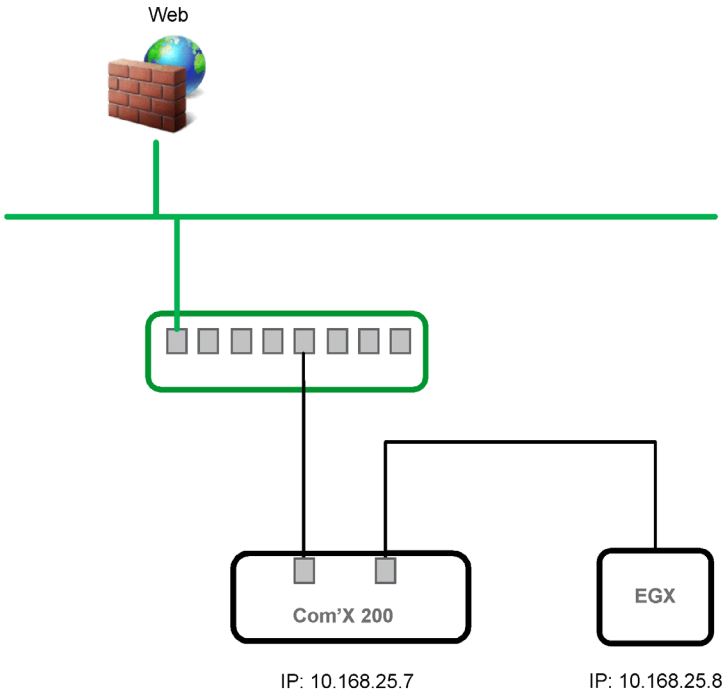
- connection in the switch mode
- connection in the upstream/downstream mode

The Com'X 200 uses Ethernet as defined by the IEEE 802.3 standard.

NOTE: You cannot set up a loop configuration because the Com'X 200 does not support STP/RSTP protocol.

Connection of the Com'X 200 in the Switch Mode

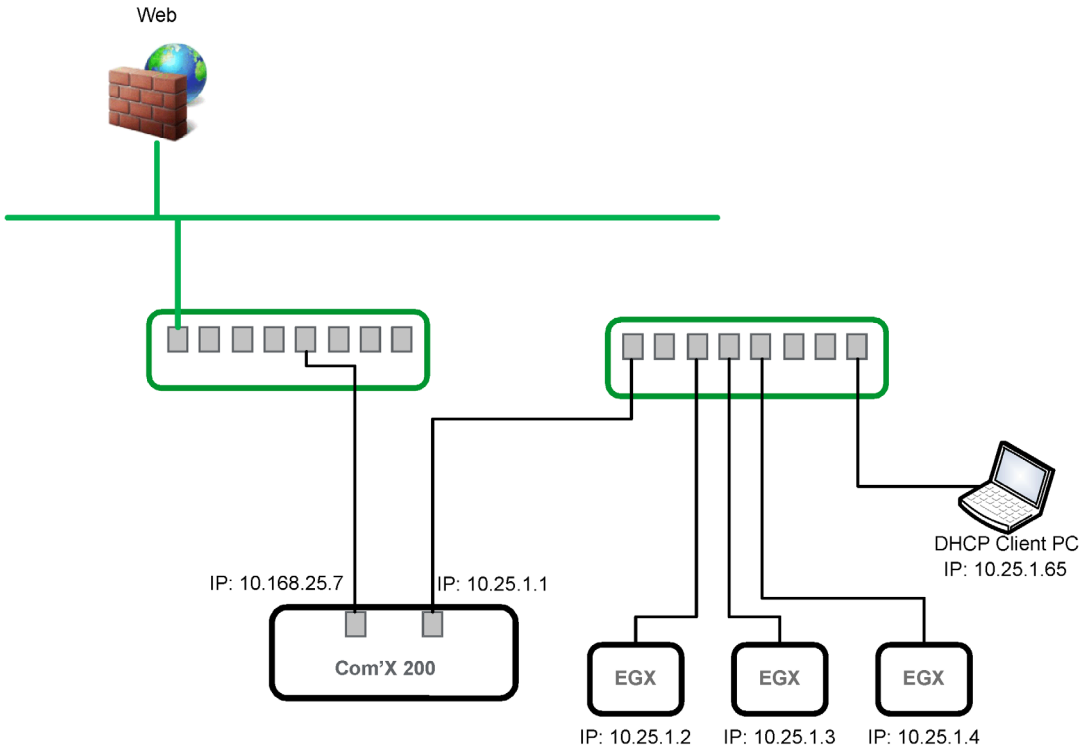
The wiring diagram for connecting the Com'X 200 to an Ethernet network in the switch connection mode via the RJ45 connector is as follows:



NOTE: The IP addresses are provided as example. These values depend on your network configuration.

Connection of the Com'X 200 in the Upstream/Downstream Mode

The wiring diagram for connecting the Com'X 200 to an Ethernet network in the upstream/downstream connection mode with the RJ45 connectors is as follows:



NOTE: The IP addresses are provided as example. These values depend on your network configuration.

Part III
Wireless Network

Chapter 5
Wireless Network

Wireless Networking Recommendations

Wireless Networking Recommendations

To ensure good operation of the GPRS modem, you have to conform to the following recommendations:

- The Com'X 200 shall be installed preferably at a height of 1 meter from the floor.
- Use the following GPRS modem and Wi-Fi USB stick references, which have been selected to run efficiently with the Com'X 200:
  - EBXA-GPRS or EBXA-GPRS-SIM for the GPRS modem.
  - EBXA-USB-WIFI for the Wi-Fi USB stick.

NOTE: The good operation of GPRS and Wi-Fi is not guaranteed with other GPRS modem or Wi-Fi USB stick.

Part IV
Com'X 200 Installation

Chapter 6
Com’X 200 Installation

Safety Instructions

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device’s ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

To verify device ratings compliance to maximum limits, see the technical data *(see page 48)*.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Technical Data	48
Com’X 200 Physical Description	50
Com’X 200 Installation in Enclosure	53
Mounting on a DIN Rail	54
Com’X 200 Wiring	55
Access to the Login Page	57

Technical Data

Communication

Characteristics	Values
2 Base 10/100 Ethernet RJ45 ports, DPWS ready	Eth1: PoE class 3 (802.3af), DHCP client
	Eth2: DHCP client or server
Protocols	IPv4, IPv6 - HTTP, HTTPS, Modbus TCP/IP
1 Modbus RS485 serial port	RJ45 and removable screw terminal connector (0V, Screen, D0, D1). Both connectors are plugged into the same Modbus RS485 serial port
	32 devices maximum

Inputs

Characteristics		Values
6 digital inputs	Pulse counting (minimum pulse width 20 ms)	Conforming to IEC 62053-31 or Status
	Internal power supply for inputs	12 Vdc, 60 mA
	External power supply for inputs	10–30 Vdc
2 analog inputs		0–10 Vdc, 4–20 mA (accuracy 0.5%)
		Pt100, Pt1000: 2-wire (accuracy 1%)
		Power supply available for analog sensors: 24 Vdc (50 mA for each input)

Electrical Characteristics

Characteristics		Values
Power supply		100–230 Vac (±15%) OVCIII Fuse protection: type T 0.63AE/250V (F1)
		24 Vdc (±10%) Fuse protection: type 3.15AL/250V (F1500)
Power consumption	100-230 Vac, 24 Vdc	26 W maximum
	PoE	15 W maximum

USB 2.0 Host Ports

Characteristics		Values
1 USB port on front face		Maximum current: 500 mA
2 USB ports behind the cover	USB1 port	Maximum current: 500 mA
	USB2 port	Maximum current: 100 mA

Expansion Bus

Characteristics	Values
Consumption on 24 Vdc	160 mA maximum
Consumption on 3.3 Vdc	110 mA maximum

Memory

Characteristics	Values
RAM	128 Mb
Flash memory	256 Mb

Mechanical Characteristics

Characteristics		Values
Degree of protection	Front face	IP40
	Connectors	IP20
Weight		450 g (0.992 lb)

Environmental Characteristics

Characteristics	Values
Operating temperature	–25 °C to +60 °C (–13 °F to +140 °F)
Storage temperature	–40 °C to +85 °C (–40 °F to +185 °F)
Humidity	5 to 95% relative humidity (without condensation) at 55 °C (131 °F)
Level of pollution	Class 3
Altitude	2,000 m (6,561 ft) maximum

Standards

Characteristics		Values
Safety standards/regulations	United States	UL 508
	Canada	cUL
	Europe	EN 60950

Marking

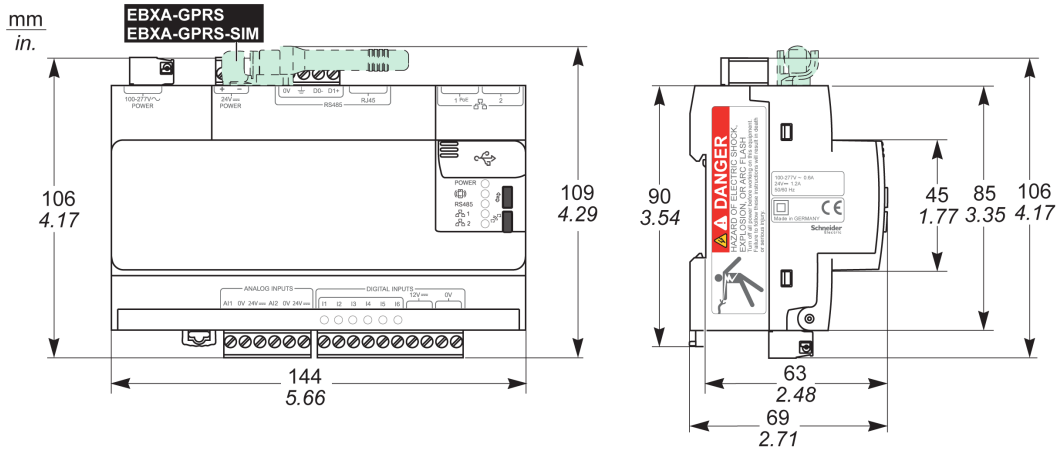
Characteristics	Values
Marking	CE, UL, C-tick

PC Specification for Configuration

Characteristics	Values
Operating system	Windows 7 (recommended), Vista, XP
Web browsers	Latest version of Mozilla, Firefox, Chrome, or IE

Com’X 200 Physical Description

Dimensions



Description

The Com’X 200 provides the following connections capabilities:

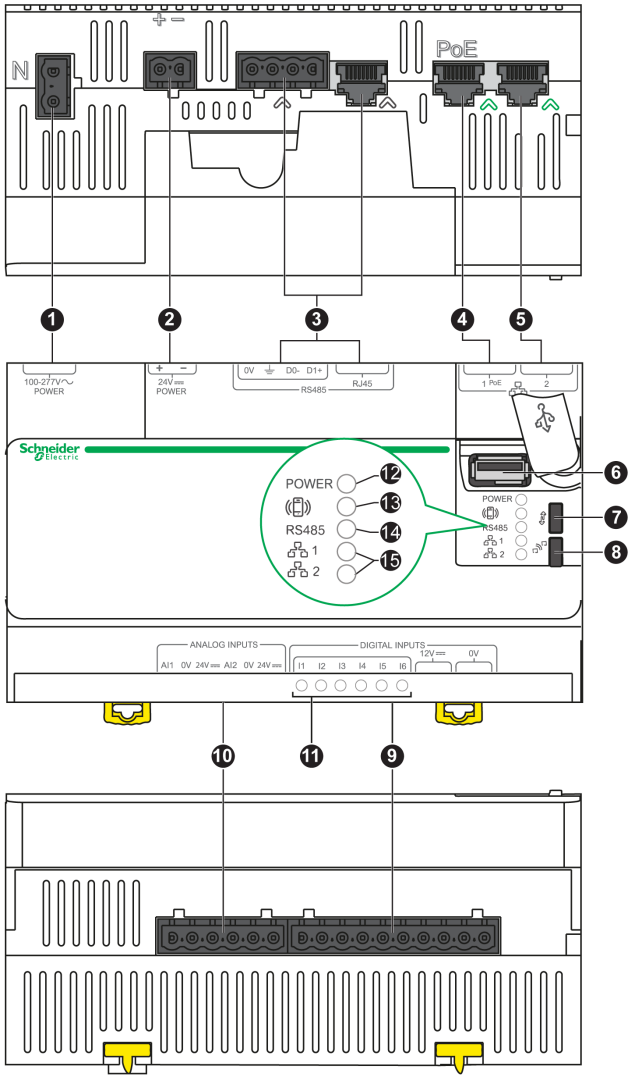
Communication

- 1 Modbus communication port
- 2 Ethernet ports, Ethernet port 1 with PoE (Power over Ethernet)
- 3 USB ports
- 6 digital inputs and 2 analog inputs

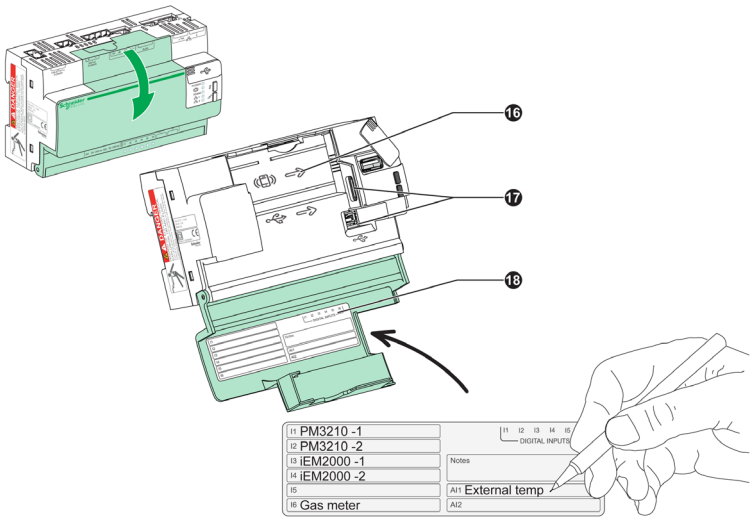
Power supply

- 100...230 Vac
- 24 Vdc
- PoE

Connectors, indicators, and buttons layout:



1 Power supply 100...230 Vac
2 Power supply 24 Vdc
3 RS 485 Modbus communication port
4 Ethernet communication port 1 PoE
5 Ethernet communication port 2
6 USB port (Backup, Wi-Fi)
7 Button/Backup indicator
8 Button/Wi-Fi indicator
9 Digital inputs
10 Analog inputs
11 Digital inputs indicator
12 Power supply indicator/State (Power LED)
13 Radio modem communication indicator (modem LED)
14 RS 485 communication indicator (LED RS 485)
15 Ethernet Communication indicators (Ethernet 1 LED, Ethernet 2 LED)



16 GPRS modem connector
17 USB port
18 Digital/analog entries labeling

Com’X 200 Installation in Enclosure

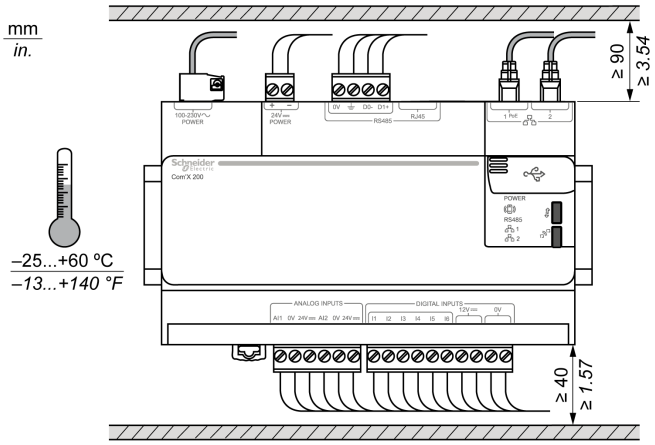
Installation Recommendations

Install the Com’X 200 in the lower third of the enclosure to achieve optimal ambient temperature for the device.

NOTE: When the enclosure is laying on the floor, it is recommended to keep a distance of 1 m between the floor and the antenna in order to ensure the correct functioning of the GPRS modem.

Com’X 200 Mounting in Enclosure

The operating temperature around the Com’X 200 must not exceed 60 °C (140 °F).



NOTE: Do not mount the Com’X 200 vertically.

Equipment Separation

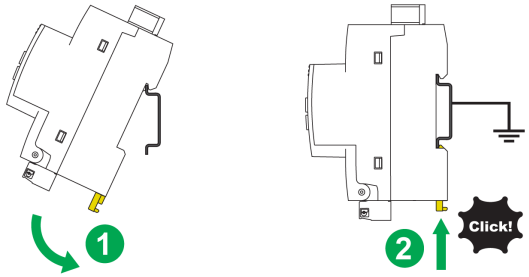
Install devices in an enclosure with respect to required spacing for each device. Devices that cause electrical disturbance should not be placed near devices that are sensitive to electrical disturbance.

Mounting on a DIN Rail

Introduction

This section describes mounting and removing of the Com'X 200 on a DIN rail.

Installing the Com'X 200 on a DIN Rail

Step	Action
1	Secure the DIN rail to a panel according to the DIN rail installation instructions.
2	Place the top groove of the Com'X 200 on the DIN rail and press the unit against the DIN rail until you hear the retaining clamp click into place. 

Din Rail Shielding in Enclosure Class 2

Make sure the DIN rail is electrically connected to earth ground to maintain shielding continuity and prevent EMC disturbances. Earth ground connection is typically terminated using a green/yellow cable.

Keep the green/yellow cable as short as possible.

Removing the Com'X 200 From a DIN Rail

Using a screwdriver, pull down the retaining clamp located on the bottom of the Com'X 200.

NOTE: Before re-installing the Com'X 200 on the DIN rail, push up the retaining clamp.

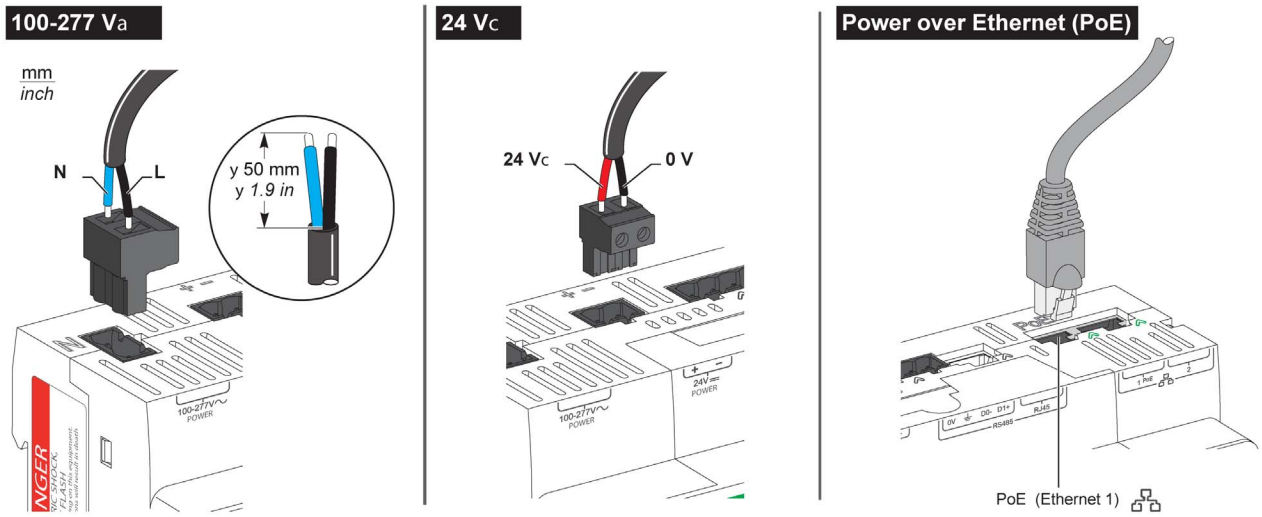
Com'X 200 Wiring

Power Supplies

You can provide a backup power supply for the Com'X 200 by connecting a UPS to the 24 Vdc input. If power is interrupted on the 100...277 Vac input, the Com'X 200 power supply will automatically switch to the 24 Vdc input.

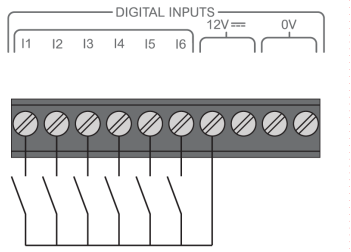
The order of priority for power supply is:

1 100...277 Vac
2 24 Vdc
3 PoE

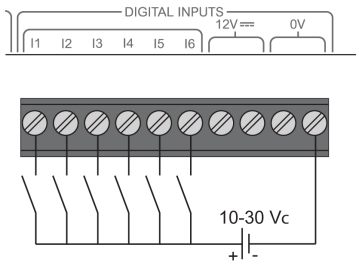


Digital Inputs

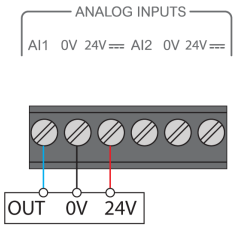
Digital inputs powered by the Com'X 200:



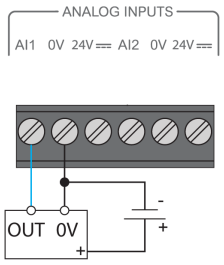
Digital inputs externally powered:



Analog inputs powered by the Com’X 200:



Analog inputs externally powered:



Access to the Login Page

Access to the Com'X 200 Web Application Under Windows 7 / Vista Operating Systems

To access the user interface of the Com'X 200, follow this procedure:

Step	Action
1	Disconnect your local computer from any network.
2	Connect an Ethernet cable between your local computer and the Ethernet port 2 of the Com'X 200.
3	On your local computer, open Windows Explorer and click **Network**. **NOTE:** The Com'X 200 appears in the list of devices (refer to troubleshooting if the Com'X 200 does not appear).
4	Double-click the Com'X 200, the login page automatically opens in your default web browser.
5	Type the user login (factory setting: admin) and the password (factory setting: admin). **NOTE:** The login and password are case-sensitive.
6	Click **OK**.

Access to the Com'X 200 Web Application Under Windows XP Operating System

To access the user interface of the Com'X 200, follow this procedure:

Step	Action
1	Disconnect your local computer from any network.
2	Connect an Ethernet cable between your local computer and the Ethernet port 2 of the Com'X 200.
3	Open your web browser.
4	In the address field, type 10.25.1.1 and press the **Enter** key.
5	Type the user login (factory setting: admin) and the password (factory setting: admin). **NOTE:** The login and password are case-sensitive.
6	Click **OK**.

The configuration of the Com'X 200 Web Application is described in the Com'X 200 *User Guide*.

Part V
Devices Installation and Settings

What Is in This Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
7	Supported Devices Overview	61
8	Wiring Monitoring Devices and Electrical Equipment	63
9	Wiring Acquisition Modules	93
10	Wiring Gateways	97
11	Wiring Analog Sensors	103
12	Wiring Converters	109

Chapter 7
Supported Devices Overview

List of Supported Devices

Supported Devices

The Com'X 200 supports the following devices in its library, which are described in the next chapters:

- Electrical pulse meters
  - EM3502
  - EN40P
  - iEM2010, iEM2000T
  - iEM3110, iEM3210
  - ME1ZR, ME3ZR, ME4ZR
  - PM9P, PM200P, PM3210, PM5100
- Electrical Modbus meters
  - EM6400, EM3550, EM3555
  - EM6400, EM6433, EM6434, EM6436, EM6438
  - iEM3150, iEM3155
  - iEM3250, IEM3255
  - ION6200, ION7300, ION7330, ION7350
  - PM9C
  - PM210, PM500, PM710, PM750, PM800 series
  - PM1200
  - PM3250, PM3255
  - PM5110, PM5111, PM5310, PM5330, PM5331, PM5350
- Ethernet meters
  - PM5320, PM5340, PM5341 single Ethernet port meters
  - PM5560, PM5561, PM5563 dual Ethernet port meters
- Circuit monitors
  - CM3000, CM4000
- Power Factor Controllers
  - Varlogic NRC12
- Circuit breakers
  - Compact NSX 100...630 A with Micrologic A and E
  - Masterpact NT and NW with Micrologic H and P
- Acquisition modules
  - Acti 9 Smartlink
  - SIM10M
- Gateways
  - PM8ECC
  - PowerLogic EGX100 Ethernet Gateway
  - PowerLogic EGX300 Ethernet Gateway

Supported Wirings for Connection to the Com'X 200

You can connect the electrical pulse meters to the Com'X 200 through 3 ways:

- Directly to the Com'X 200.
- Through SIM10M acquisition module.
- Through Acti 9 Smartlink acquisition module.

The direct connection to the Com'X 200 and the connection through SIM10M acquisition modules are documented in the following pages.

For connection of the electrical pulse meters through the Acti 9 Smartlink, refer to the *Acti 9 Communication System User Manual*.

Electrical Modbus meters, circuit breakers, acquisition modules, and gateways are connected directly to the Com'X 200.

Chapter 8
Wiring Monitoring Devices and Electrical Equipment

Safety Instructions

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

NOTE: Refer to the manufacturer's documentation for each device for complete installation instructions.

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
8.1	Wiring Diagrams for Electrical Pulse Meters	64
8.2	Electrical Modbus Meters	72
8.3	Electrical Ethernet Meters	86
8.4	Circuit Monitors	89
8.5	Power Factor Controllers	90
8.6	Circuit Breakers	91

Section 8.1
Wiring Diagrams for Electrical Pulse Meters

What Is in This Section?

This section contains the following topics:

Topic	Page
EM3502	65
EN40P / iEM2010 / iEM2000T	66
iEM3110 / iEM3210 / PM3210	67
ME1Zr / ME3Zr / ME4Zr	68
PM9P	69
PM200P	70
PM5100	71

EM3502

Overview

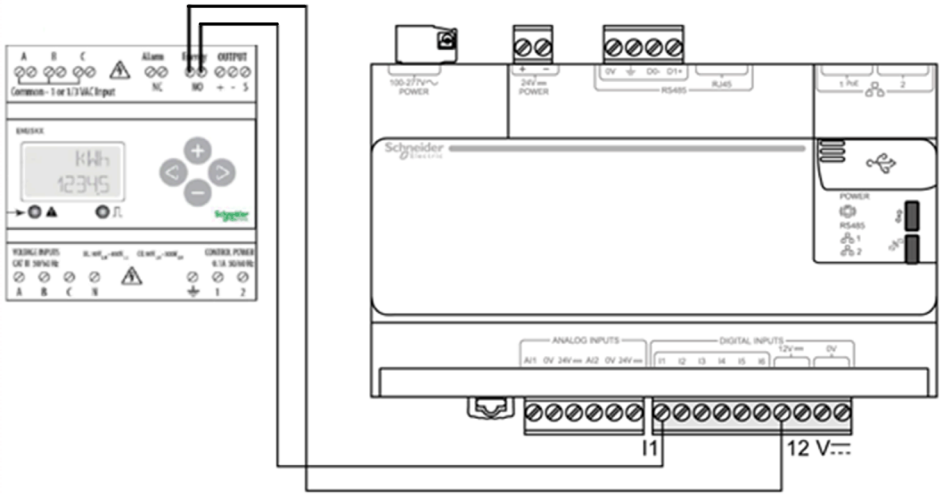
The EM3502 is a compact power meter that includes pulse outputs of real and reactive energy consumption, plus a real-time alarm output. It provides standard measurements, including:

- Power (3-phase total and per phase):
  - Real (kW)
  - Reactive (kVAR)
  - Apparent (kVA)
- Present Power Demand:
  - Real (kW)
  - Reactive (kVAR)
  - Apparent (kVA)
- Peak Power Demand:
  - Real (kW)
  - Reactive (kVAR)
  - Apparent (kVA)
- Power Factor (3-phase average and per phase)
- Current (3-phase average and per phase)
- Voltage (3-phase average and per phase):
  - Line-Line
  - Line-Neutral

For more information on instructions or functions of the EM3502, refer to *EM3502, EM3550 Compact Power and Energy Meter Installation Guide*.

EM3502 Wiring Diagram To Com'X 200

Electrical wiring to the Com'X 200:



EN40P / iEM2010 / iEM2000T

Overview

EN40P, iEM2010 and iEM2000T are 40 A single-phase kilowatt-hour meter.

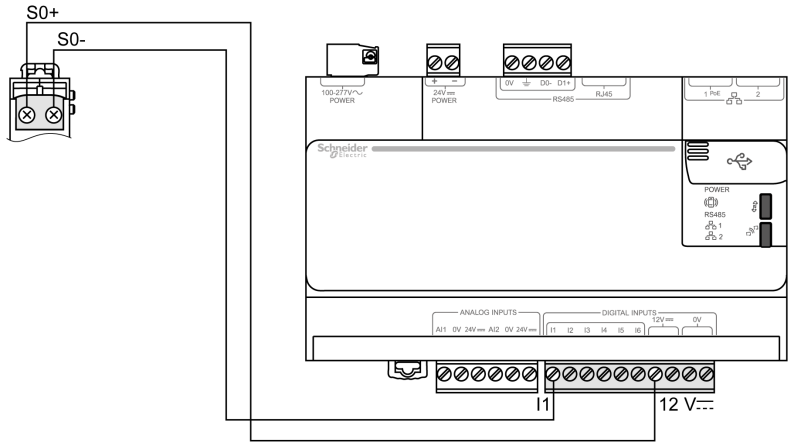
The pulse weight of these meters cannot be changed, and equals to 10 Wh.

For more information on instructions or functions of:

- EN40P, refer to *EN40P Instruction Sheet*.
- iEM2010, refer to *iEM2010 Instruction Sheet*.
- iEM2000T, refer to *iEM2000T Instruction Sheet*.

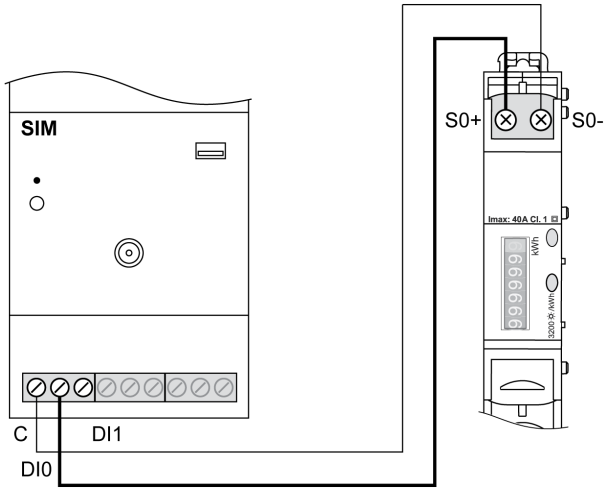
EN40P / iEM2010 / iEM2000T Wiring Diagram to Com'X 200 and SIM10M

Electrical wiring to the Com'X 200:



NOTE: The EN40P has polarized outputs.

Electrical wiring to SIM10M:



iEM3110 / iEM3210 / PM3210

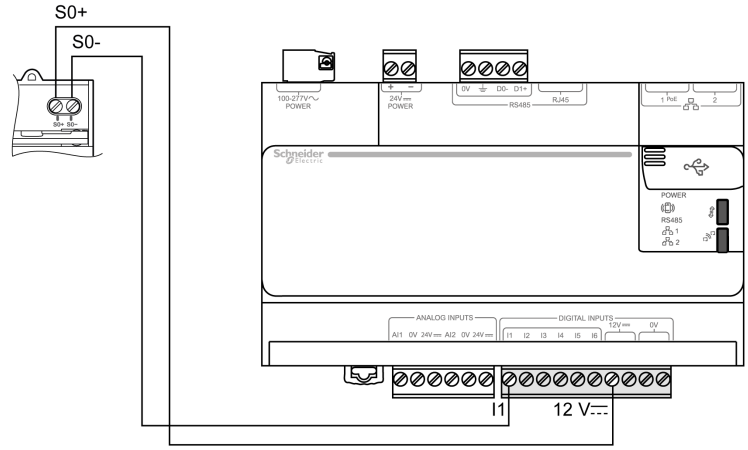
Overview

The iEM3110, iEM3210, PM3210 are 3-phase + neutral kilowatt-hour meters with partial metering, reset, and remote transfer of metered pulses.

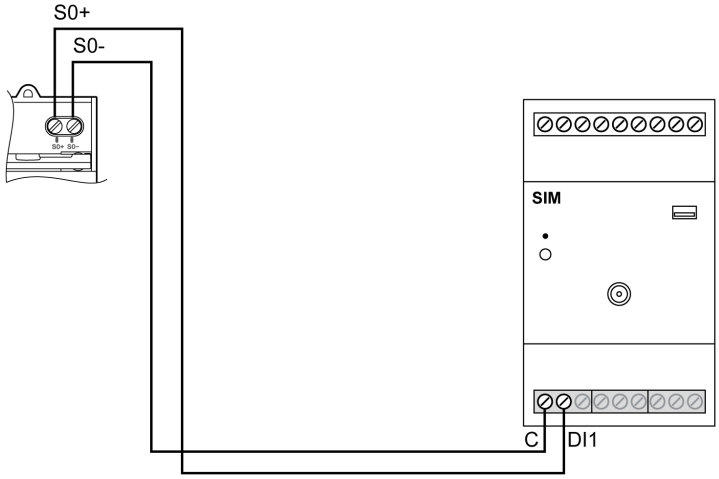
For more information on instructions or functions of the iEM3110, iEM3210, PM3210, refer to corresponding Instruction Sheet.

iEM3110 / iEM3210 / PM3210 Wiring Diagram to Com'X 200 and SIM10M

Electrical wiring to the Com'X 200:



Electrical wiring to SIM10M:



iEM3110 / iEM3210 / PM3210 Pulse Output Setup

Step	Action
1	Press simultaneously **OK** and **ESC** buttons to enter the **Setup** menu.
2	Enter password 0010.
3	Scroll to the **Pulse** menu and press **OK**.
4	Select the **Pulse Freq/Constant** menu and select the pulse weight in kWh.
5	Validate the **Save change** proposal by pressing the **OK** button.
6	Select the **Pulse width** menu, select the pulse duration in ms, and press **OK**.
7	Validate the **Save change** proposal by pressing the **OK** button.
8	Press 2 times on **ESC** button to exit the setup menu.

ME1Zr / ME3Zr / ME4Zr

Overview

ME1Zr is a 63 A single-phase kilowatt-hour meter with partial meter.

ME3Zr is a 63 A three-phase kilowatt-hour meter without neutral, and with partial metering.

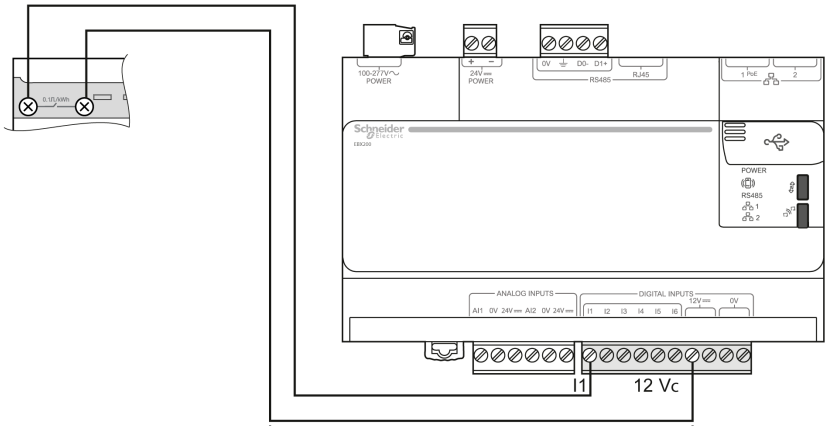
ME4Zr is a 63 A three-phase + neutral kilowatt-hour meter with partial metering.

For more information on instructions or functions of:
- ME1ZR, refer to *ME1ZR Instruction Sheet.*
- ME3ZR, refer to *ME3ZR Instruction Sheet.*
- ME4ZR, refer to *ME4ZR Instruction Sheet.*

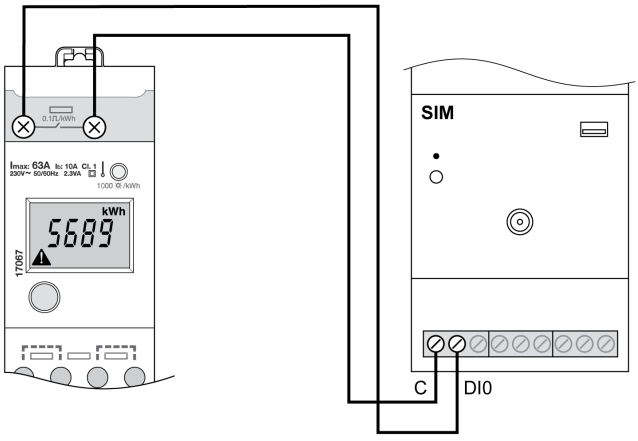
Wiring Diagram

Electrical wiring to the Com'X 200

ME1Zr / ME3Zr / ME4Zr



Electrical wiring to the SIM10M



PM9P

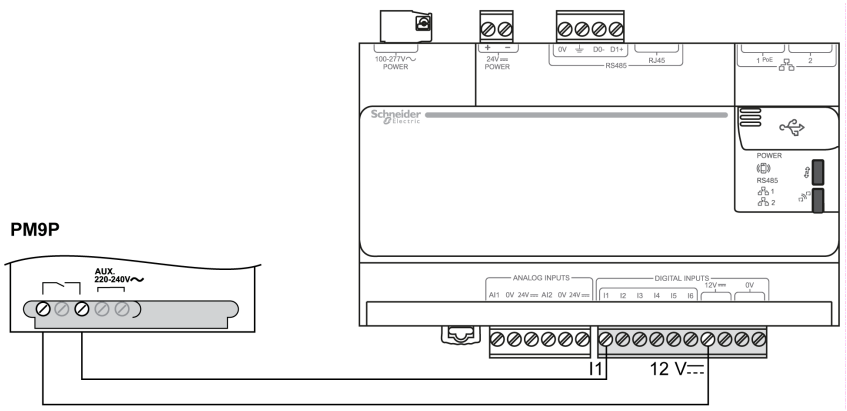
Overview

The PM9P is an electrical measurement and metering unit for 1Ph+N, 3Ph, and 3Ph+N low-voltage systems.

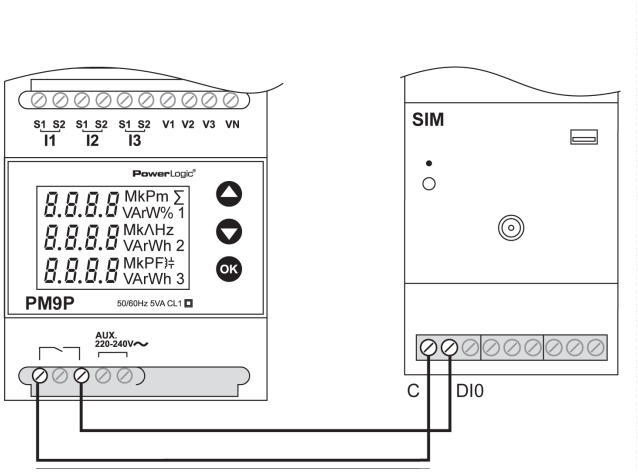
For more information on instructions or functions of the PM9P, refer to *PM9P Instruction Sheet*.

PM9P Wiring Diagram to the Com'X 200 and SIM10M

Electrical wiring to the Com'X 200:



Electrical wiring to SIM10M:



PM9P Pulse Output Setup

Step	Action
1	Press simultaneously the ▼ and the OK button to enter the settings menu.
2	Enter pass code: 0010.
3	Press several times the **OK** button to scroll to **PULS EnEr** menu and select **Wh** to measure active energy.
4	Press **OK** to access to **PULS UAL** menu and select pulse weight in kWh.
5	Press **OK** to access to **PULS dUr** menu and select pulse duration in ms.
6	Press **OK** several times to exit settings menu.

PM200P

Overview

The PM200P is a 3-phase power meter, with 2 integrated digital pulse outputs.

Output connected on pins 7-8 is dedicated to active energy measurement.

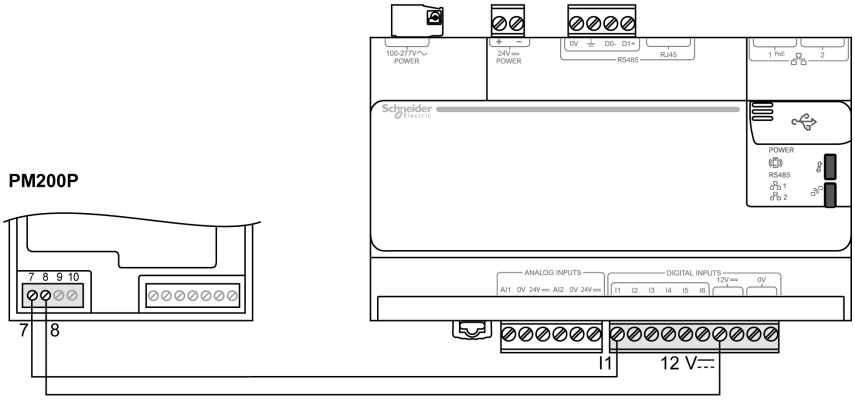
Output connected on pins 9-10 is dedicated to reactive energy measurement.

The Com'X 200 digital inputs manages only pulses associated to active energy measurement.

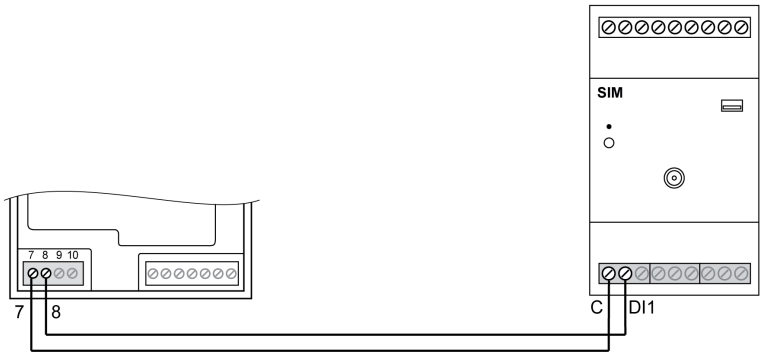
For more information on instructions or functions of PM200P, refer to *PowerLogic Power Meter 200 and 200P Installation Guide*.

PM200P Wiring Diagram to Com'X 200 and SIM10M

Electrical wiring to the Com'X 200:



Electrical wiring to SIM10M:



PM200P Pulse Output Setup

Step	Action
1	Press --> to scroll to **DIAGN** menu.
2	Press **DIAGN** button.
3	Press **SETUP** button.
4	Press + button and validate password 0000 by pressing **OK**.
5	Press --> to scroll to **PULSE** menu.
6	Press **PULSE** button.
7	Select **MSEC** menu to select pulse duration in ms and press **OK**.
8	Select **KWH/P** menu to select pulse weight in kWh and press **OK**.
9	Press **Return** button several times to exit configuration mode and display measurements values.

PM5100

Overview

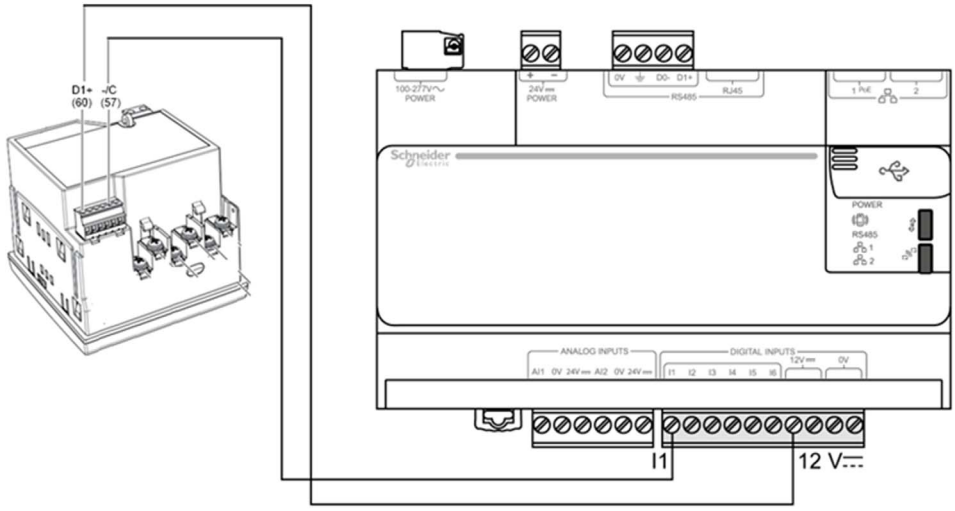
The PowerLogic PM5100 power meter provides:

- a single digital pulse output
- 33 alarms
- power quality analysis up to the 15th harmonic

For more information on instructions or functions of PM5100, refer to *, PM5100, PM5110, PM5111 Information Sheet*.

PM5100 Wiring Diagram To Com'X 200

Electrical wiring to the Com'X 200:



Section 8.2
Electrical Modbus Meters

What Is in This Section?

This section contains the following topics:

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EM3550 / EM3555

Overview

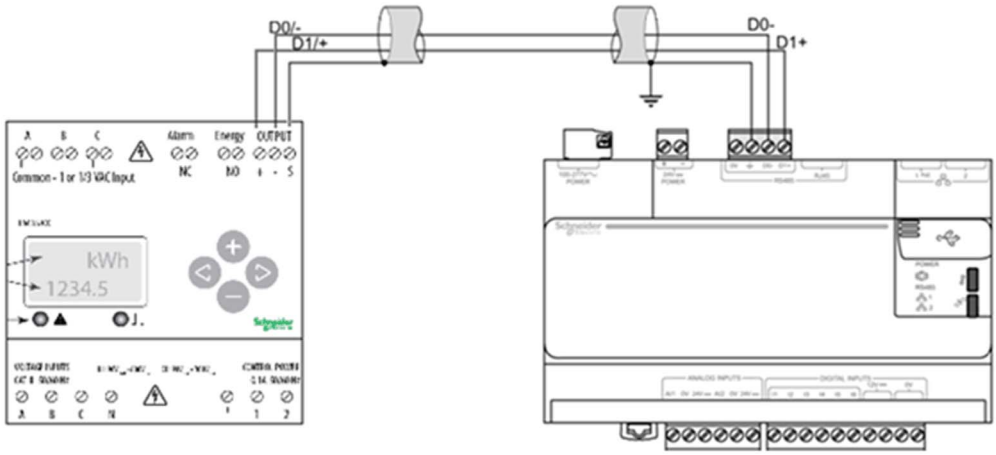
The EM3550 and EM3555 Modbus meters combine exceptional performance and easy installation to deliver a cost-effective solution for power monitoring applications. Each meter can be installed on standard DIN rail or surface mounted.

Pulse output and phase alarms provide additional versatility. Modbus outputs offer added flexibility for system integration.

The data logging feature of the EM3555 helps protect data in the event of a power failure. Modbus, pulse output, and phase alarms are provided to suit a wide variety of applications.

For more information on meter functionality, refer to the *EM3500 Series DIN Rail Meter Technical data sheet.*

EM35500 / EM3555 Wiring Diagram to Com'X 200



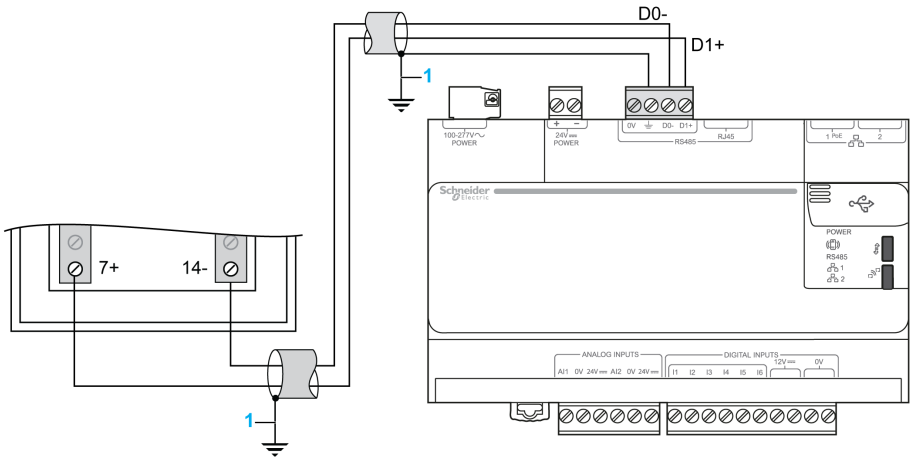
EM6400 / EM6433 / EM6434 / EM6436 / EM6438

Overview

The EM6400 series of meters are digital power meters that offer comprehensive three-phase electrical instrumentation and load management facilities in a compact and rugged package.

For more information on instructions or functions of EM6400 series, refer to *Dietitian EM6400 Series User Manual*.

EM6400 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

EM6400 Series Communication Setup

Step	Action
1	From **RMS** menu, press the up arrow button: the display indicates **CLR**.
2	Press the up arrow button: the display indicates **SET**.
3	Press the right arrow button: the display indicates **VIEW**.
4	Press the down arrow button: the display indicates **EDIT.CODE**.
5	Press the right arrow button for 2 seconds: the display blinks, indicating **CODE 2000**.
6	To enter pass code 1000 (default setting), press the down arrow button: the display indicates **CODE 1000** with blinking 1. Press **Return** once, and press the right arrow button 4 times to accept the new code value. The display flashes **PASS** and then **EDIT A.PRI 100.0** indicating successful entry in edit mode.
7	Press the right arrow button several times until the display indicates **EDIT BAUD**.
8	Select the correct Baud rate and press **Return** to validate.
9	Select the correct parity, the number of stop bit, and press **Return** to validate.
10	Select the correct Modbus address (ID) and press **Return** to validate.
11	Press the left arrow button: the display indicates **SAVE YES** with a blinking Y.
12	Press the left arrow button to save the new values: the display flashes **PASS** and then displays **EDIT**.
13	Press the left arrow button to go back to **SET**, and display the measurement values.

iEM3150 / iEM3155 / iEM3250 / iEM3255

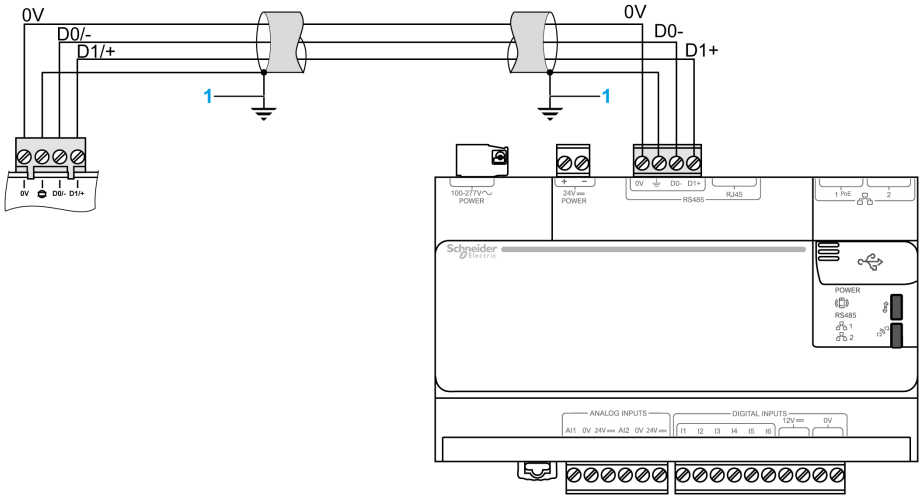
Overview

iEM3150, iEM3155, iEM3255, and iEM3250 are 3-phase + neutral kilowatt-hour meter with partial metering and reset.

For more information on instructions or functions of:

- iEM3150,iEM3155, refer to *iEM3150,iEM3155 Instruction Sheet.*
- iEM3250, iEM3255, refer to *iEM3250, iEM3255 Instruction Sheet.*

iEM3x5x Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has t o be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

IEM3150 / iEM3250 Communication Setup

Step	Action
1	Press simultaneously the **Esc** and the **OK** buttons for 2 sec to enter in **Setup** mode.
2	Press **Down** arrow until you reach the **Communication** screen, and press **OK**.
3	Enter the **Address** parameter, and press **OK**.
4	Enter the **Baud Rate** parameter, and press **OK**.
5	Enter the **Parity** parameter, and press **OK**.
6	Press **Down** arrow to select **Exit config item** and press **OK** to confirm.

iEM3155 / iEM3255 Communication Setup

Step	Action
1	Press simultaneously the **Esc** and the **OK** buttons for 2 sec.
2	Enter pass code: 0010 to enter the **Setup** menu.
3	Press the **Down** arrow until you reach the **Comm** screen, and press **OK**.
4	Enter the **Address** parameter, and press **OK**.
5	Enter the **Baud Rate** parameter, and press **OK**.
6	Enter the **Parity** parameter, and press **OK**.
7	Press **Down** button to select **Exit config**, and press **OK** to confirm.

ION6200 / ION7300 / ION7330 / ION7350

Overview

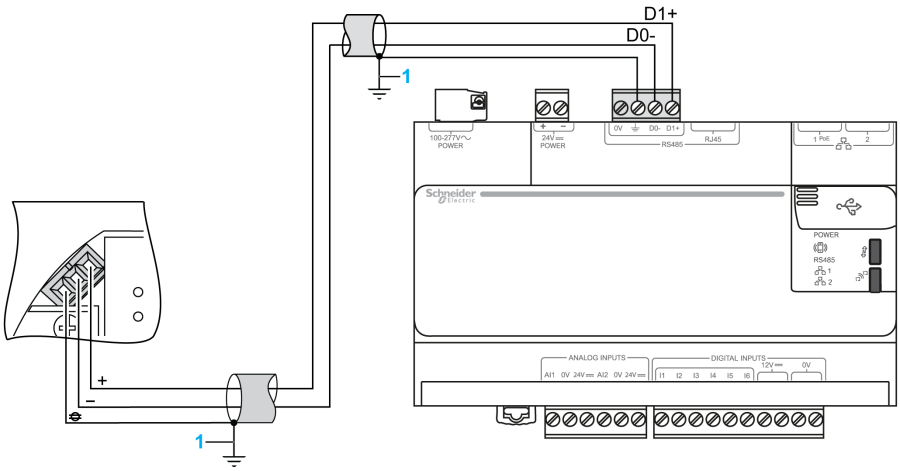
The ION6200 is a power-monitoring unit, complete with four-quadrant power, demand, energy, power factor, and frequency measurements.

The ION7300 series meters are intelligent metering and control devices suited to a wide range of applications. The meters can be used as stand-alone devices, but their extensive capabilities are fully realized when used as part of an enterprise energy management (EEM) system.

For more information on instructions or functions of ION6200, refer to *PowerLogic ION6200 Power and Energy Meter Installation & Operation Guide.*

For more information on instructions or functions of ION7300 series, refer to *PowerLogic ION7300 series User Guide.*

ION6200 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

Using the ION6200 Meter

With the meter front panel, you can view parameter values, configure parameters, perform demand resets, perform LED checks, and view meter information. Each of these functions can be accomplished by pressing the **Up**, **Down**, and **Enter** buttons on the front panel. These button actions achieve different results according to the meter mode:

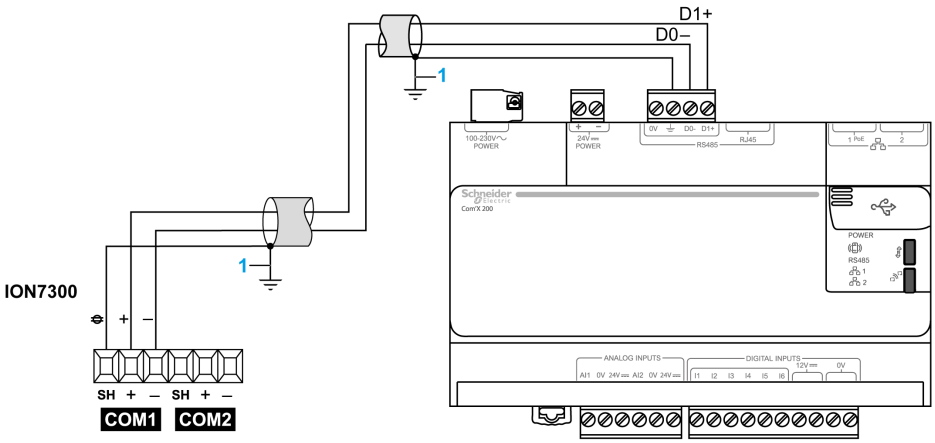
- **Display** mode (default): view parameter measurements.
- **Reset** mode: reset demand measurements.
- **Configuration** Select/Edit modes: configure a parameter.
- **Information** mode: verify that the LED front panel display operates, and view meter information (for example, meter options, firmware version).

Execute the following steps to access the configuration screen and configure the communications parameters:

Step	Action
1	Press simultaneously the **Up** and **Down** buttons for 2 seconds to enter the Configuration Select mode, and release the **Up** and **Down** buttons.
2	Press the **Up** or **Down** buttons until you reach the **Protocol** parameter in the communication section.
3	Press the **Enter** button to enter the configuration edit mode.
4	Press the **Up** or **Down** buttons to configure the **Protocol** parameter.
5	Press the **Enter** button to save the parameter value.
6	Repeat steps 2 to 5 to configure **Baud Rate**, and **Unit ID**.

Refer to *PowerLogic ION6200 Power and Energy Meter Installation & Operation Guide* for power meter use.

ION7300, ION7330, ION7350 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

Using the ION7300 Series Meter

Serial communications are available on COM1, and COM2. To enable communications through the meter serial ports, configure the applicable communications module.

The Protocol, Tran delay, Baud rate, and unit ID setup registers must properly match your system and can be set through the meter front panel or ION software.

To access the communications module, follow this procedure:

Step	Action
1	Press the round button to access the front panel main setup menu. The setup menu appears listing the meter front panel setup options.
2	Select **Quick Setup** to access the communications module.
3	Enter the appropriate values for **Protocol**, **Baud Rate**, and **Unit ID**.

NOTE: ION7330 is not consistant with the Com'X 200 default settings. Change the Com'X 200 settings to a configuration without parity.

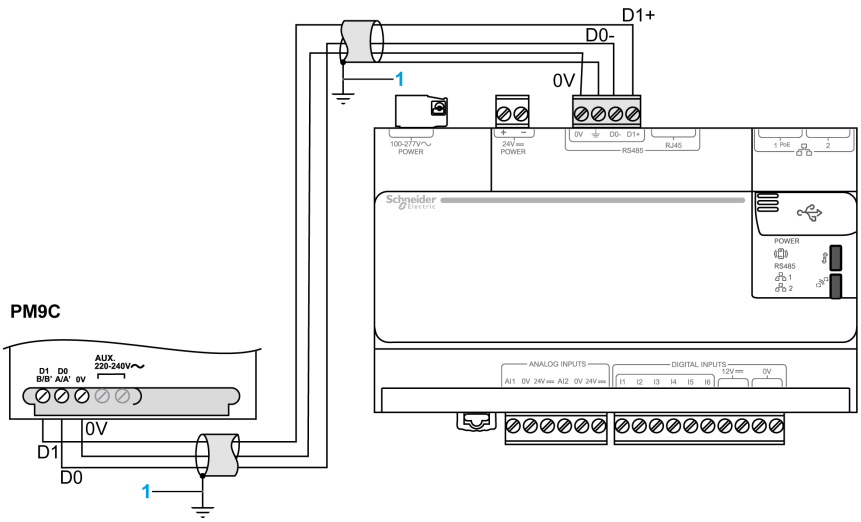
PM9C

Overview

The PM9C is an electrical measurement and metering unit for 1Ph+N, 3Ph, and 3Ph+N low-voltage systems.

For more information on instructions or functions of PM9C, refer to *PM9C Instruction Sheet*.

PM9C Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM9C Communication Setup

Step	Action
1	Press simultaneously the ▼ and the OK button to enter the settings menu.
2	Enter pass code: 0010.
3	Press the **OK** button several times to go to **ADDR** menu.
4	Set the Modbus address parameters and press **OK**.
5	Go to **BAUD** menu to set the Modbus Baud rate parameters and press **OK**.
6	Go to **PAR** menu to set the Modbus parity parameters and press **OK**.

PM210 / PM500 / PM710 / PM750 / PM800 Series

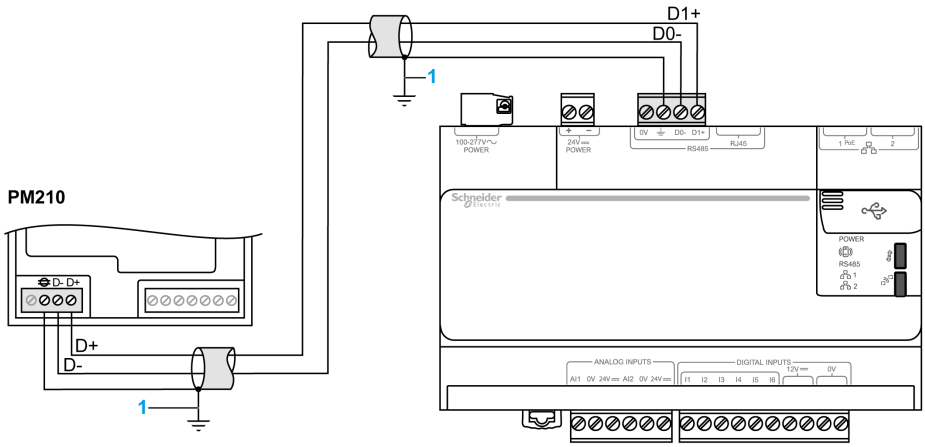
Overview

The PM210, PM500, PM710, PM750, and PM800 series meters offer all measurement capabilities required to monitor an electrical installation, associated to remote transfer of metering values by RS 485 Modbus communication network (2-wire connection).

For more information on instructions or functions of:

- PM210, refer to *PowerLogic Power Meter 210 Reference Manual.*
- PM500, refer to *Power Meter PM500 Installation and User Manual*.
- PM710, refer to *PM710 Reference Manual.*
- PM750, refer to *PM750 Installation Guide.*
- PM800, refer to *PowerLogic PM800 Series Quick Reference Guide.*

PM210 Wiring Diagram to Com'X 200



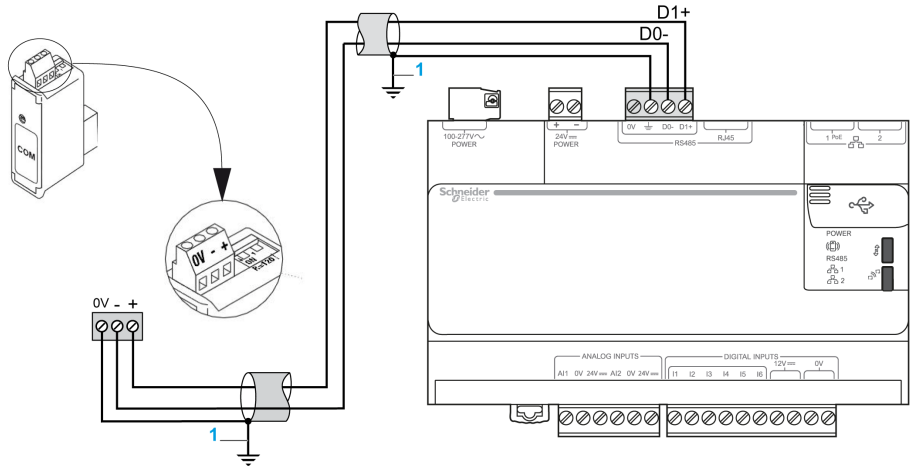
1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM210 Communication Setup

Step	Action
1	From **Home** menu, press **--->** until you see **DIAGN**, and press **Setup**.
2	Enter pass code: 0000.
3	Press **COM** to have access to the Baud rate, address, and parity setup.
4	Enter address.
5	Press **OK**.
6	Enter Baud rate.
7	Press **OK**.
8	Enter parity.
9	Press **OK**.
10	Press the **Return** button several times to exit configuration mode, and display measurement values.

PM500 Wiring Diagram to Com'X 200

The graphic shows how to connect the PM500 Modbus option to the Com'X 200:



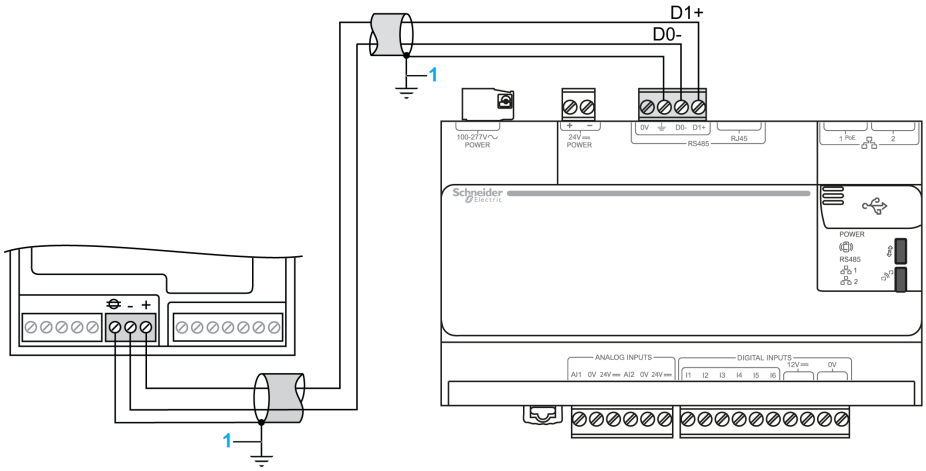
1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

If the PM500 device is located at 1 termination of the Modbus line, flip switches 1 and 2 must be set on the ON position.

PM500 Communication Setup

Step	Action
1	Press the **Prog** button for at least 3 sec to enter the programming mode.
2	Enter code 100.
3	Press the **Return** button to confirm the code.
4	Press the **Down** button until you reach the **COM** screen.
5	Enter the address, and confirm with the **Return** button.
6	Press the **Down** button to configure the Baud rate.
7	Enter the Baud rate, and confirm with the **Return** button.
8	Press the **Down** button to configure the parity.
9	Enter the parity, and confirm with the **Return** button.
10	Press the **Down** button to configure the stop bit.
11	Enter the stop bit, and confirm with the **Return** button.
12	Press the **Prog** button for at least 3 sec to exit the programming mode.

PM710, PM750 and PM800 Series Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM710 and PM750 Communication Setup

Step	Action
1	From **Home** menu, press **SETUP**.
2	Enter pass code: 0000.
3	Press **--->** until **COM** is visible.
4	Enter address.
5	Press **OK**.
6	Enter Baud rate.
7	Press **OK**.
8	Enter parity.
9	Press **OK**.
10	Press **OK** to return to the **SETUP** mode.

PM800 Communication Setup

Step	Action
1	From **Home** menu, press **--->** until you see **MAINT**, and press **Setup**.
2	Enter pass code: 0000.
3	Press **--->** until **COMMS** is visible.
4	Press **COMM1**.
5	Select the protocol.
6	Press **OK**.
7	Enter address.
8	Press **OK**.
9	Enter Baud rate.
10	Press **OK**.
11	Enter parity.
12	Press **OK**.
13	Press until you are asked to save your changes.
14	Press **YES** to save your changes.
15	Repeat steps 5 to 14 to configure other potential Modbus ports.

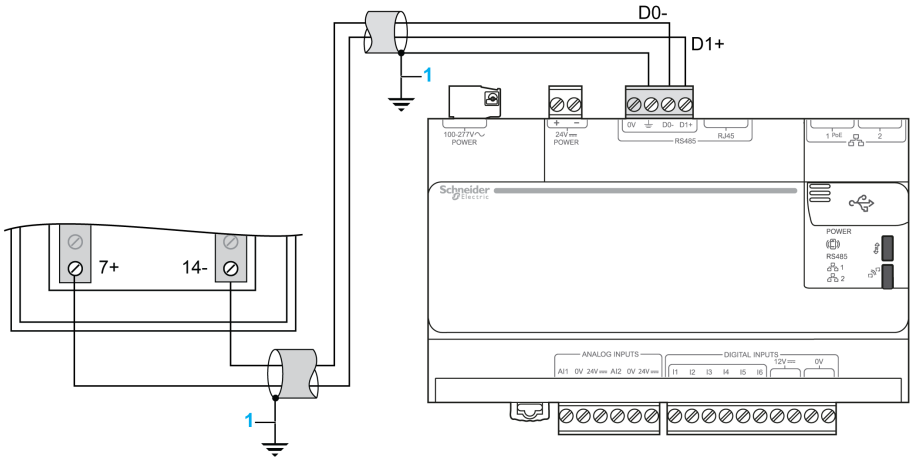
PM1200

Overview

The PM1200 power meter is easy-to-use, cost effective, and offers the basic measurement capabilities required to monitor an electrical installation.

For more information on instructions or functions of PM1200, refer to *PowerLogic System Catalog*.

PM1200 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM1200 Communication Setup

Step	Action
1	From **RMS** menu, press the up arrow button: the display indicates **CLR**.
2	Press the up arrow button: the display indicates **SET**.
3	Press the right arrow button: the display indicates **VIEW**.
4	Press the down arrow button: the display indicates **EDIT.CODE**.
5	Press the right arrow button for 2 seconds: the display blinks, indicating **CODE 2000**.
6	To enter the pass code 1000 (default setting), press the down arrow button: the display indicates **CODE 1000** with blinking 1. Press **Return** once, and press the right arrow button 4 times to accept the new code value. The display flashes **PASS** and then **EDIT A.PRI 100.0** indicating successful entry in edit mode.
7	Press the right arrow button several times until the display indicates **EDIT BAUD**.
8	Select the correct Baud rate and press **Return** to validate.
9	Select the correct parity, the number of stop bit, and press **Return** to validate.
10	Select the correct Modbus address (ID) and press **Return** to validate.
11	Press the left arrow button: the display indicates **SAVE YES** with a blinking Y.
12	Press the left arrow button to save the new values: the display flashes **PASS** and then displays **EDIT**.
13	Press the left arrow button to go back to **SET**, and display the measurement values.

PM3250 / PM3255 / PM5110 / PM5111 / PM5310 / PM5330 / PM5331

Overview

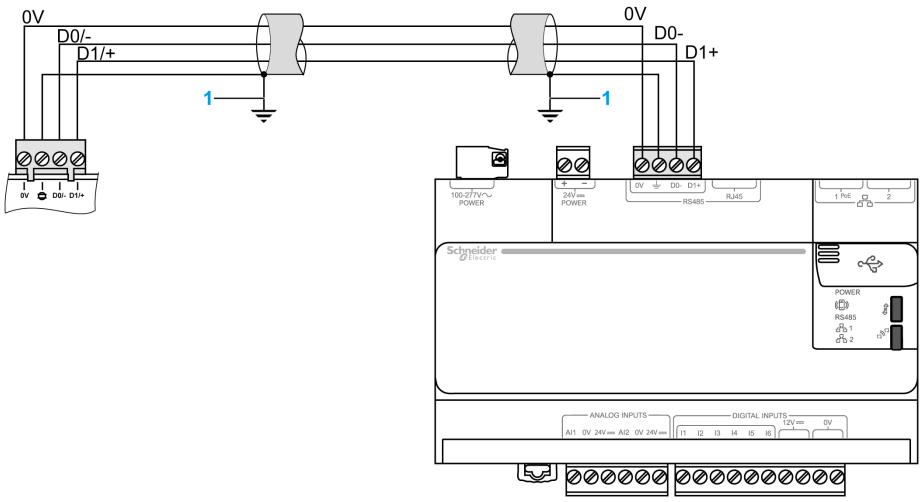
The PowerLogic PM3250 and PM3255Modbus power meters provide:
- electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
- min/max and time-stamped alarms
  - 5 time-stamped alarms for PM3250
  - 15 time-stamped alarms for PM3255
- LED communications indicator
- RS485 communications
- additional features of the :
  - 2 digital inputs
  - 2 digital outputs
  - memory for load profile

Both the PowerLogic PM5110 and the PM5111 Modbus power meters provide:
- a single digital pulse output
- 33 alarms
- power quality analysis up to the 15th harmonic

The PowerLogic PM5310, PM5330 and PM5331 Modbus power meters provide:
- 2 digital inputs
- 2 digital outputs
- 256K memory
- 35 alarms
- power quality analysis up to the 31st harmonic

For more information on instructions or functions of:
- PM3250, PM3255, refer to *PM3250, PM3255 Instruction Sheet.*
- PM5110, PM5111, refer to *PM5110, PM5111 Instruction Sheet.*
- PM5310, refer to *PM5310 Instruction Sheet.*
- PM5330, PM5331, refer to *PM5330, PM5331 Instruction Sheet.*

PM3250 / PM3255 / PM5110 / PM5111 / PM5310 / PM5330 / PM5331 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM3250 / PM3255 Communication Setup

Step	Action
1	Press simultaneously the **Esc** and the **OK** buttons for 2 sec.
2	Enter pass code: 0010 to enter the **Setup** menu.
3	Press the **Down** arrow until you reach the **Comm** screen, and press **OK**.
4	Enter the **Address** parameter, and press **OK**.
5	Enter the **Baud Rate** parameter, and press **OK**.
6	Enter the **Parity** parameter, and press **OK**.
7	Press **Down** button to select **Exit config**, and press **OK** to confirm.

PM5110 / PM5111 / PM5310 / PM5330 / PM5331 Communication Setup

Step	Action
1	Scroll to **Maint** in the menu list.
2	Press **Maint**.
3	Press **Setup**.
4	Press **Comm** to enter the communications setup screen.
5	Press the down arrow to select **Protocol**, then press **Edit**.
6	Press **+** or **-** to scroll through the protocol options.
7	Press **OK** to set the protocol.
8	Press the down arrow to select **Address**, then press **Edit**.
9	Enter address.
10	Press **OK** to set the address.
11	Press the down arrow to select **Baud Rate**, then press **Edit**.
12	Press **+** or **-** to scroll through the Baud rate options.
13	Press **OK** to set the Baud rate.
14	Press the down arrow to select **Parity**, then press **Edit**.
15	Press **+** or **-** to scroll through the parity options.
16	Press **OK** to set the parity.

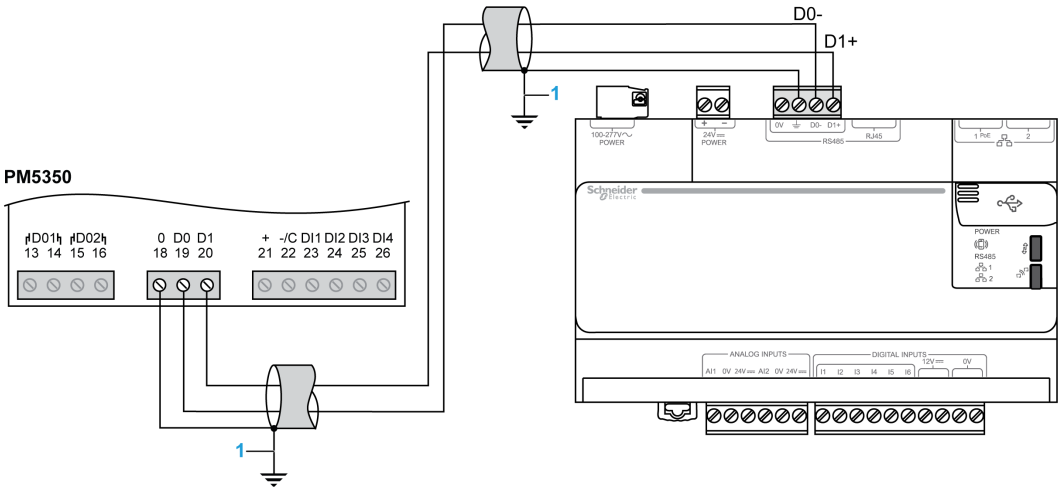
PM5350

Overview

The PowerLogic PM5350 power meter offers all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 44 mm behind the mounting surface.

For more information on instructions or functions of PM5350, refer to *PowerLogic Power Meter PM5350 User Guide.*

PM5350 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM5350 Communication Setup

Step	Action
1	Scroll to **Maint** in the menu list.
2	Press **Maint**.
3	Press **Setup** and enter your setup password. **NOTE:** The default password is 0000.
4	Press **Comm** to enter the communications setup screen.
5	Press the down arrow to select **Protocol**, then press **Edit**.
6	Press **+** or **-** to scroll through the protocol options.
7	Press **OK** to set the protocol.
8	Press the down arrow to select **Address**, then press **Edit**.
9	Enter address.
10	Press **OK** to set the address.
11	Press the down arrow to select **Baud Rate**, then press **Edit**.
12	Press **+** or **-** to scroll through the Baud rate options.
13	Press **OK** to set the Baud rate.
14	Press the down arrow to select **Parity**, then press **Edit**.
15	Press **+** or **-** to scroll through the parity options.
16	Press **OK** to set the parity.

Section 8.3
Electrical Ethernet Meters

What Is in This Section?

This section contains the following topics:

Topic	Page
PM5320 / PM5340 / PM5341	87
PM5560 / PM5561 / PM5563	88

PM5320 / PM5340 / PM5341

Overview

The PowerLogic PM5320, the PM5340, and the PM5341 Ethernet power meters provide:

- a single Ethernet (Modbus TCP/IP) 10/100 port
- 256 K memory
- 2 digital inputs
- 2 digital outputs
- 35 alarms
- Power quality analysis up to the 31st harmonic

For more information on instructions or functions of the PM5320, PM5340, and PM5341, refer to the *PM5310, PM5320, PM5330, PM5331, PM5340, PM5341 Instruction Sheet*.

PM5320 / PM5340 / PM5341 Wiring Diagram To Com'X 200

To wire the Ethernet meter, connect the Ethernet port on the power meter to an Ethernet switch on the same network as the Com'X 200.

PM5320 / PM5340 / PM5341 Ethernet Communication Setup

Step	Action
1	Navigate to **Maint** →**Setup**.
2	Enter the setup password (default is 0000), then press **OK**.
3	Press **Comm**.
4	Move the cursor to point to the parameter you want to modify, then press **Edit**.
5	Modify the parameter as required, then press **OK**.
6	Move the cursor to point to the next parameter you want to modify, press **Edit**; make your changes; then press **OK**.

PM5560 / PM5561 / PM5563

Overview

The PowerLogic PM5560, the PM5561, and the PM5563 Ethernet power meters provide:

- Dual Ethernet (Modbus TCP/IP) 10/100 ports
- 1.1 M memory
- 4 digital inputs
- 2 digital outputs
- 52 alarms
- Power quality analysis up to the 63rd harmonic

For more information on instructions or functions of the:

- PM5560, refer to *PM5560 Instruction Sheet*.
- PM5561, refer to *PM5561 Instruction Sheet*.
- PM5563, refer to *PowerLogic PM5563 Instruction Sheet*.

PM5560 / PM5561 / PM5563 Wiring Diagram To Com'X 200

To wire the Ethernet meter, connect any Ethernet port on the power meter to an Ethernet switch on the same network as the Com'X 200.

If you wish to create an Ethernet communication bus, connect the left Ethernet port on the power meter to an Ethernet switch on the same network as the Com'X 200 and use the right Ethernet port to continue the communication bus.

PM5560 / PM5561 / PM5563 Ethernet Communication Setup

Step	Action
1	Navigate to **Maint** →**Setup**.
2	Enter the setup password (default is 0), then press **OK**.
3	Press **Comm** →**Enet**.
4	Move the cursor to point to the parameter you want to modify, then press **Edit**.
5	Modify the parameter as required, then press **OK**.
6	Move the cursor to point to the next parameter you want to modify, press **Edit**; make your changes; then press **OK**.

Section 8.4
Circuit Monitors

CM3000 / CM4000

Overview

The Power Logic CM3000 and CM4000 circuit are high-performance circuit monitoring meters for mains or critical loads on both high voltage and low voltage networks. Both circuit monitors provide the following functionality:

- Metering
- Remote display
- On-board logging
- Waveform capture
- Disturbance monitoring (standard on the CM4000; optional on the CM3000)
- Revenue accuracy (class 0.5 for the CM3000; class 0.2 for the CM4000)
- RS485 communication

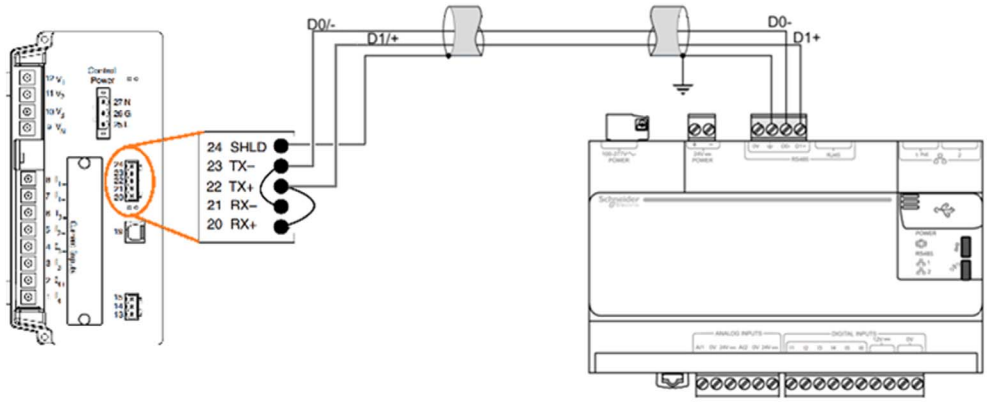
The CM400 additionally provides:

- Programmable logic
- Field upgradable memory
- Optional transient capture
- RS232 communication

For more information on the:

- CM3000, refer to the *PowerLogic Series 3000Circuit Monitor Reference Manual*
- CM4000, refer to the *PowerLogic Series 4000Circuit Monitor Reference Manual*

CM3000 / CM4000 Wiring Diagram to Com'X 200



Section 8.5
Power Factor Controllers

Varlogic NRC12 Controller

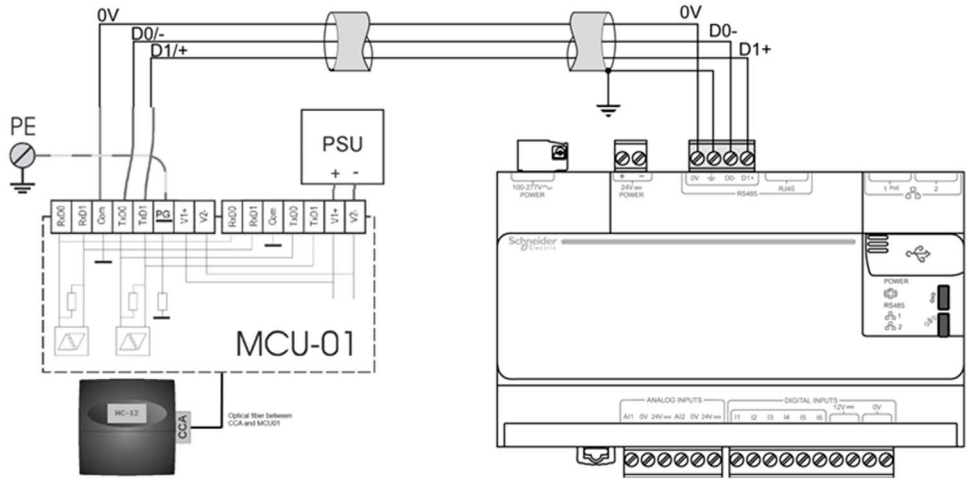
Overview

The Varlogic NRC12 controller measures and records the reactive power of the installation, and provides 12 step output contacts that control the connection and disconnection of capacitor steps in order to obtain the necessary power factor.

For more information on instructions or functions of the Varlogic NRC12, refer to *Varlogic NRC12 Power factor controller User manual*.

Varlogic NRC12 Controller Wiring Diagram To Com'X 200

Electrical wiring to the Com'X 200:



Varlogic NRC12 Modbus Communication Setup

Step	Action
1	Select **PARAMETERS** from the main menu of VARLOGIC HMI.
2	Access to the parameters menu is locked. To unlock, press both arrow keys simultaneously for 2 seconds.
3	Select **MODBUS SETUP**.
4	Scroll to the Mode sub-menu, then select **READ** (Communication is read only).
5	Scroll to Address sub-menu and select the appropriate address.
6	Scroll to Bit/s sub-menu and select a communication baudrate.

NOTE: The Parity bit is fixed and is always equal to **Even**.

Section 8.6
Circuit Breakers

NSX Micrologic and Masterpact

Overview

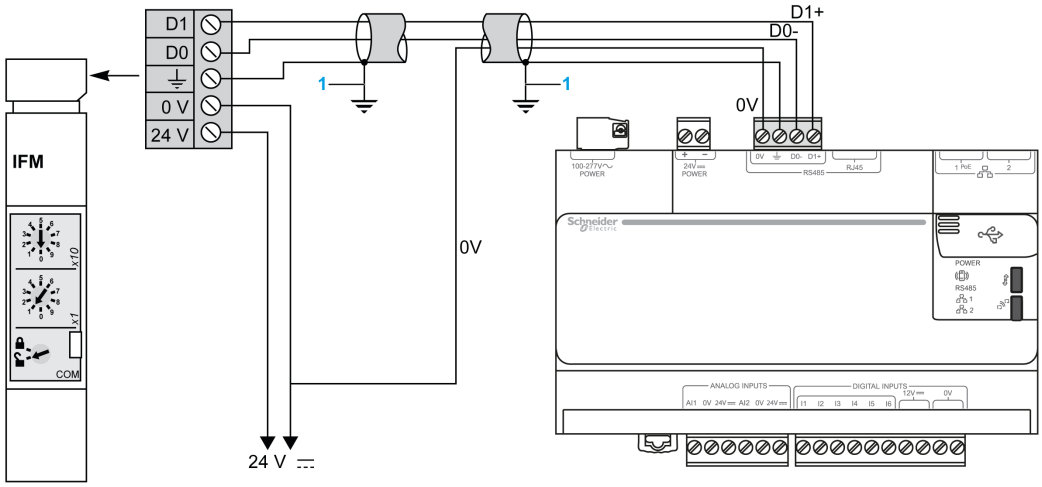
Compact NSX is a 100...630 A circuit breaker range.

Masterpact is a 800...6,300 A circuit breaker range.

For power connections and more technical details on the Compact NSX and Masterpact, refer to *Modbus Communication for Circuit Breakers CompactNSX, CompactNS, and Masterpact NT/NW Circuit Breakers* document.

NSX Micrologic or Masterpact Wiring Diagram to Com'X 200 Through the IFM

Compact NSX / Masterpact NT/NW + IFM



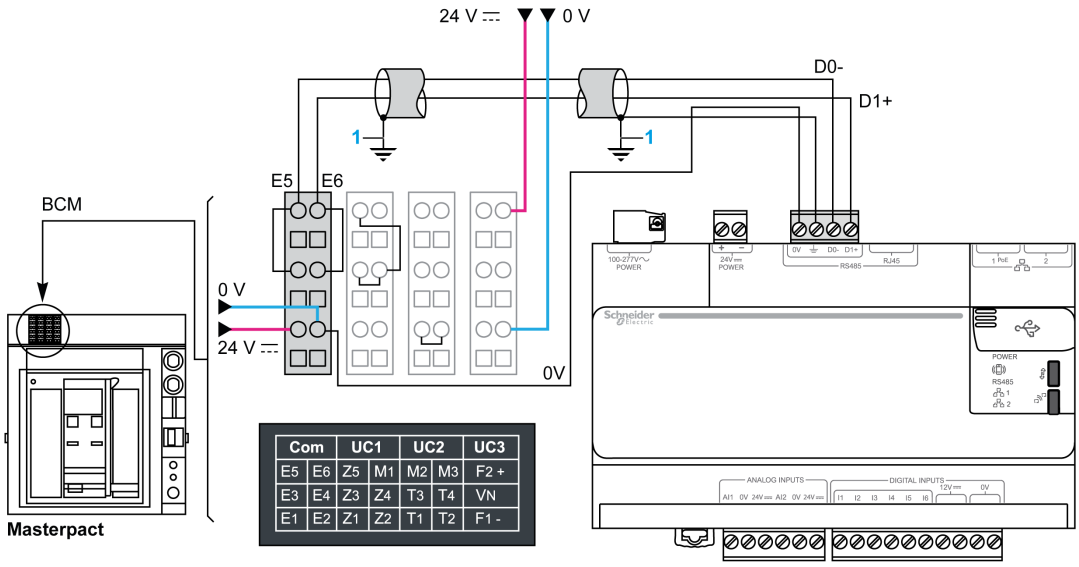
1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

IFM Communication Setup

Use the 2 coding wheels on IFM front panel to set the Modbus address.

The IFM module automatically detects the Baud rate and parity when it is connected to the Modbus network.

Masterpact Wiring Diagram to Com'X 200 Through the BCM



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

Configuring the BCM with a Masterpact and Micrologic A, E, H and P

The Modbus address and communication parameters are defined using the keypad on the Micrologic P or H trip unit.

Step	Action	Micrologic P or H
1	Press to access the configuration menu.	
2	Select **Configure com** then **Parameter com.** to display the **Modbus Com** screen.	
3	Press the and keys to select the address setting, then press the key to confirm.	
4	Press the and keys to define the address, then press the key to confirm.	
5	Go back to step 3 to set the Baud rate, then the parity.	

Chapter 9
Wiring Acquisition Modules

Safety Instruction

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

NOTE: Refer to the manufacturer's documentation for each device for complete installation instructions.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Acti 9 Smartlink	94
SIM10M	95

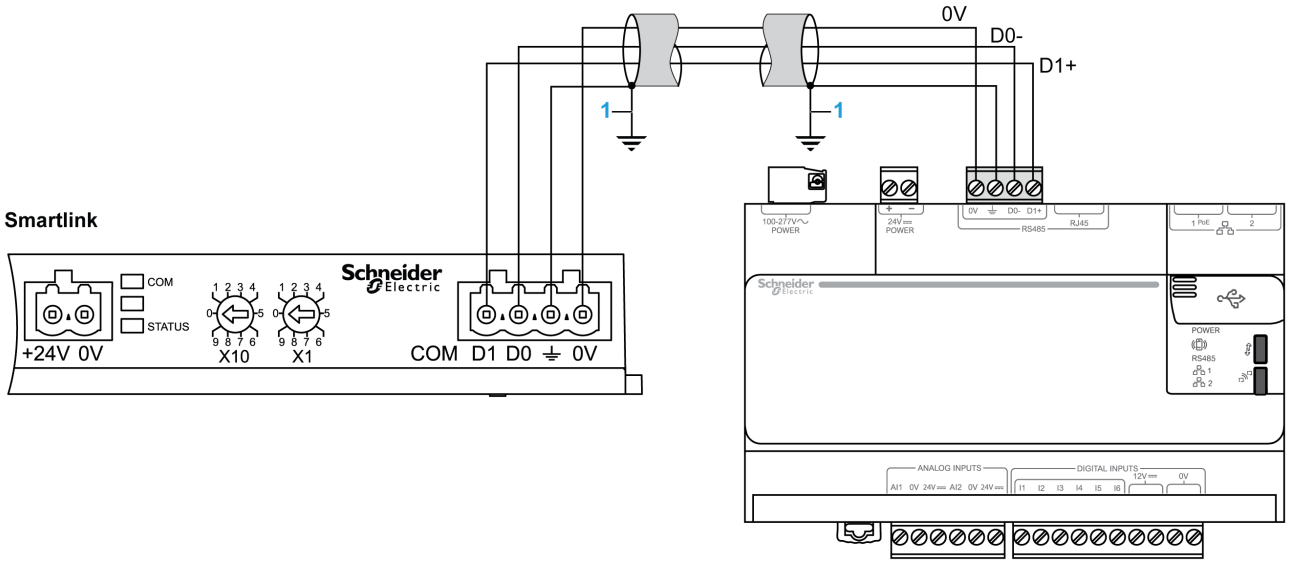
Acti 9 Smartlink

Overview

The Acti 9 Smartlink communication system is used to monitor, measure, and control electrical distribution boards via a Modbus communication network.

Refer to the *Acti 9 Communication System User Manual* for more details on Acti 9 Smartlink, and for connecting all the channels to the Acti 9 Smartlink.

Acti 9 Smartlink Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

Setting the Modbus Address Parameters

The Acti 9 Smartlink modbus addressing is performed using the 2 thumbwheels X10 and X1 located on the front side.

- The left-hand thumbwheel sets the tens.
- The right-hand thumbwheel sets the units.

The Acti9 Smartlink module automatically detects the Baud rate and parity when it is connected to the Modbus network.

SIM10M

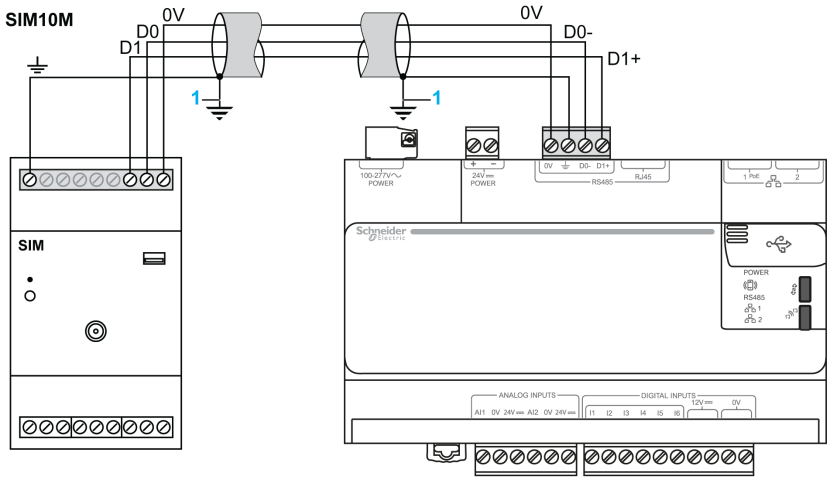
Overview

Smart Interface Module (SIM) are IEDs (Intelligent Electronic Devices) used in energy efficiency applications that provide local physical interfaces with building WAGES (Water Air Gas Electricity Steam) meters, sensors, and actuators. They communicate through wired or wireless networks with remote monitoring and control systems.

For more information or instructions on SIM10M, refer to *Smart Interface Modules Installation Guide.*

SIM10M Wiring Diagram to Com'X 200

Electrical connection to the Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

SIM10M Communication Setup

The SIM10M is configured by a web server configuration tool. Once the SIM10M has been connected to the acquisition devices, the SIM10M node has to be configured.

Baud rate, parity, and address parameters are configured using the SIM_range_configuration_tool.

Pulse weight, unit, index value, and analog input scaling are managed through the Com'X 200 configuration screens.

Step	Action
1	Download the *SIM_range_configuration_tool* on a local PC.
2	Launch the configuration software.
3	Configure the SIM10M parameters: **Baud rate**, **Parity**, **Address**. The other parameters keep their default value.
4	Connect the SIM10M to the PC through a USB cable. The SIM10M LED turns yellow.
5	Select the virtual **COM** port according to the USB port affectation, and download configuration into the SIM10M.
6	Disconnect the USB cable. The SIM10M turns green.

Chapter 10
Wiring Gateways

Safety Instruction

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

NOTE: Refer to the manufacturer's documentation of each device for complete installation instructions.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
EGX100 / EGX300	98
PM8ECC	101

EGX100 / EGX300

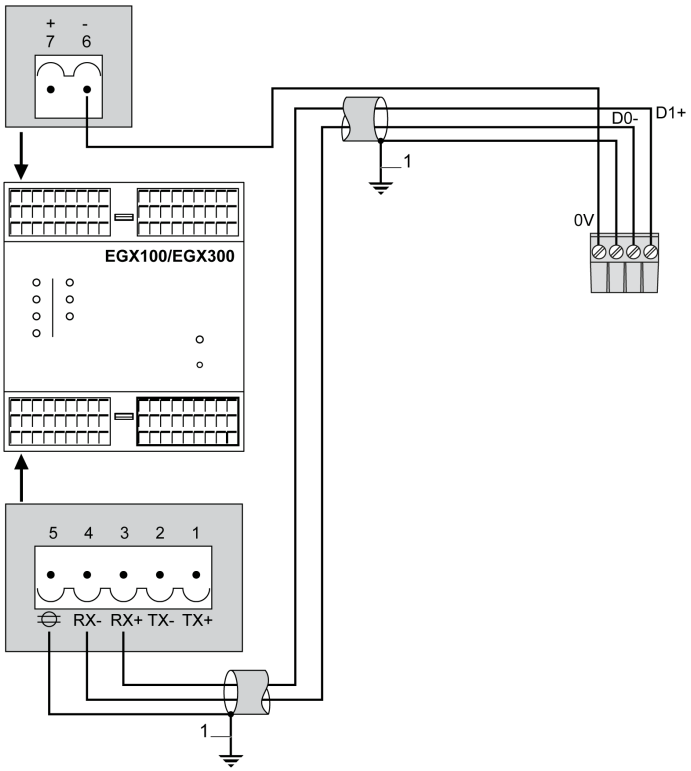
Overview

The EGX100 / EGX300 are Ethernet-based devices providing a transparent interface between Ethernet-based networks and field devices. Field devices include meters, monitors, protective relays, and other devices that communicate using Modbus.

The EGX100 / EGX300 can be used to connect Modbus devices when you are too far from the Com'X 200 master Modbus port. This can be the case for large buildings or several buildings connected by the same IP network or ADSL connection.

For power connections and more technical details on:
- EGX100, refer to *PowerLogic Ethernet Gateway EGX100 User Guide*.
- EGX300, refer to *PowerLogic Ethernet Gateway EGX300 User Guide*.

EGX100 / EGX300 Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

EGX100 Communication Setup

The EGX is delivered with 8 pre-installed web pages used for EGX setup and configuration:
- Ethernet & TCP/IP
- Serial Port
- Device List
- User Accounts
- Web Page Access
- Modbus TCP/IP Filtering
- SNMP Parameters
- System Access Point

This procedure describes the different steps for setting up the EGX100 Ethernet port and declaring the Modbus devices connected below the EGX100.

Before proceeding, please note:
- Modbus product addresses
- Modbus product Baud rates
- Modbus product parity
- EGX100IP address
- subnet mask where your EGX will be connected
- router IP address, if the EGX100 is not directly connected to the Com'X 200 network

Step	Description	Action
1	First connection to EGX100	● Connect your laptop to the connector on the top face of the EGX by an RJ45 LAN crossover cable. By default, the IP address of the EGX100 is 169.254.0.10 (User name: Administrator, Pass code: Gateway). ● Change the IP of your laptop to be on the same sub network as the EGX100. For example: Laptop address: 169.254.0.9 Subnet mask: 255.255.255.0 ● Open an Internet Explorer window and type the default IP address of your EGX100.
2	Configuration of IP Network port	● In the **Setup** menu on the top of the main window, select **Ethernet & TCIP/IP** sub-menu. ● Keep the Ethernet default parameters unchanged. ● Configure the **IP Address**, the **Subnet Mask**, and the **Default Gateway** parameters. (Ethernet default parameters: Frame format = Ethernet II, Media Type = 10T/100Tx Auto)
3	Configuration of Modbus serial port	● In the **Setup** menu on the top of the main window, select **Serial Port** sub-menu. ● Keep the **Mode**, the **Physical Interface**, the **Transmission Mode**, and the **Response Timeout** default parameters unchanged. ● Configure the **Baud Rate** and **Parity** parameters, according to Modbus slaves Baud rate and parity possibilities. Most common values are Baud rate = 19200 and parity = even. (**Transmission Mode** default parameters: Mode = Master, Physical Interface = RS 485 2-wire, Transmission mode = Automatic, Response Timeout = 3 s)
4	Modbus device declarations	● In the **Setup** menu on the top of the main window, select **Device List** sub-menu. ● Select the number of viewable devices (1 to 128). ● Configure the **Local ID** according to the slaves addresses, and **Protocol** parameters for each viewable device. ● Set **Protocol** = Modbus for all the slaves.

EGX300 Communication Setup

This procedure describes the different steps for setting up the EGX300 communication ports.

Before proceeding, please note:
- the EGX300 IP address
- the subnet mask where your EGX will be connected
- the router IP address, if the EGX300 is not directly connected to the Com'X 200 network
- the Modbus network characteristics: Baud rate and parity

Step	Description	Action
1	First connection to EGX300	• Connect your laptop to the connector on the top face of the EGX by an RJ45 LAN crossover cable. By default, the IP address of the EGX300 is 169.254.0.10 (User name: Administrator, Pass code: Gateway). • Change the IP of your laptop to be on the same sub network as the EGX300. For example: Laptop address: 169.254.0.9 Subnet mask: 255.255.255.0 • Open an Internet Explorer window and write the default IP address of your EGX300.
2	Configuration of IP Network port	• In the **Setup** menu on the top of the main window, select **Ethernet & TCIP/IP** sub-menu. • Keep the Ethernet default parameters unchanged. • Configure the **IP Address**, the **Subnet Mask**, and the **Default Gateway** parameters. (Ethernet default parameters: Frame format = Ethernet II, Media Type = 10T/100Tx Auto)
3	Configuration of Modbus serial port	• In the **Setup** menu on the top of the main window, select **Serial Port** sub-menu. • Keep the **Mode**, the **Physical Interface**, the **Transmission Mode**, and the **Response Timeout** default parameters unchanged. • Configure the **Baud Rate** and **Parity** parameters, according to Modbus slaves Baud rate and parity possibilities. Most common values are Baud rate = 19200 and parity = even. (**Transmission Mode** default parameters: Mode = Master, Physical Interface = RS 485 2-wire, Transmission mode = Automatic, Response Timeout = 3 s)

Refer to *PowerLogic Ethernet Gateway EGX300 User Guide* for more details on communication setup.

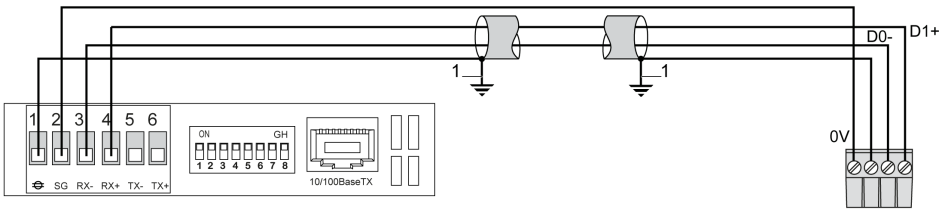
PM8ECC

Overview

The PM8ECC is a communications add-on module for the Series 800 Power Meter that provides connectivity between Ethernet (Modbus TCP/IP) and serial line devices. It allows Modbus TCP/IP clients to access information from the host power meter and the serial slave devices.

For more information on instructions or functions of PM8Ecc, refer to *PowerLogic Series 800 Power Meter Ethernet Communications Card User Guide.*

PM8ECC Wiring Diagram to Com'X 200



1 If the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, it has to be grounded at both ends.

PM8ECC Ethernet Configuration

Before configuring the PM8ECC, obtain a unique static IP address, subnet mask, and default gateway address from your network administrator. Use a web browser or the power meter display to configure the PM8ECC with the information obtained from your network administrator.

Refer to *PowerLogic Series 800 Power Meter Ethernet Communications Card User Guide* for more details.

PM8ECC Communication Setup

After you set up the PM8ECC Ethernet parameters, you can access the PM8ECC over an Ethernet LAN using Internet Explorer 6.0 or higher.

The PM8ECC user interface for communication setup consists of multiple web pages.

To access the Setup web page links, click **Setup** on the PM8ECC menu bar.

Refer to *PowerLogic Series 800 Power Meter Ethernet Communications Card User Guide* for more details on each web page.

First connection to PM8ECC

Step	Action
1	Connect your laptop to your PM8ECC by an RJ45 LAN cable.
2	Change the IP of your laptop to be on the same sub network as the PM8ECC. For example: Laptop address: 169.254.0.9, subnet mask: 255.255.255.0. The factory setting for the IP address of the PM8ECC is 169.254.0.10 (User name: Administrator, Pass code: Gateway).
3	Open an Internet explorer window and type the default IP address of your PM8ECC to access the PM8ECC home page.

NOTE: All PM8ECC have the same default login and password. To avoid unexpected access to the gateway, you have to change these parameters. Go to **Setup** →**User accounts** menu to change user name and password.

Configuration of IP network port

Step	Action
1	Select **Setup** menu on the top of your window.
2	From the **Setup** menu, click **Ethernet & TCPIP**.
3	Select your frame format and media type. Contact your network administrator if you do not know the required configurations.
4	Enter your IP address, subnet mask, and default gateway address assigned to your PM8ECC by your network administrator.
5	Click **Apply**.
6	Click **OK** to validate the changes.
7	Click **OK**.

Configuration of Modbus serial port

Step	Action
1	From the **Setup** menu, click **Serial Port**.
2	Select your physical interface, transmission mode, Baud rate, parity, and response time-out.
3	Click **Apply**.

Modbus device declarations

Step	Action
1	From the **Setup** menu, click **Device list**.
2	Select the number of viewable devices (1 to 128).
3	In the **Local ID** text box, type the local ID (address) of the serial slave device.
4	Select the protocol.
5	Repeat steps 3 and 4 until all devices are entered.
6	Click **Apply**.

Chapter 11
Wiring Analog Sensors

Safety Instruction

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

NOTE: Refer to the manufacturer's documentation for each device for complete installation instructions.

What Is in This Chapter?

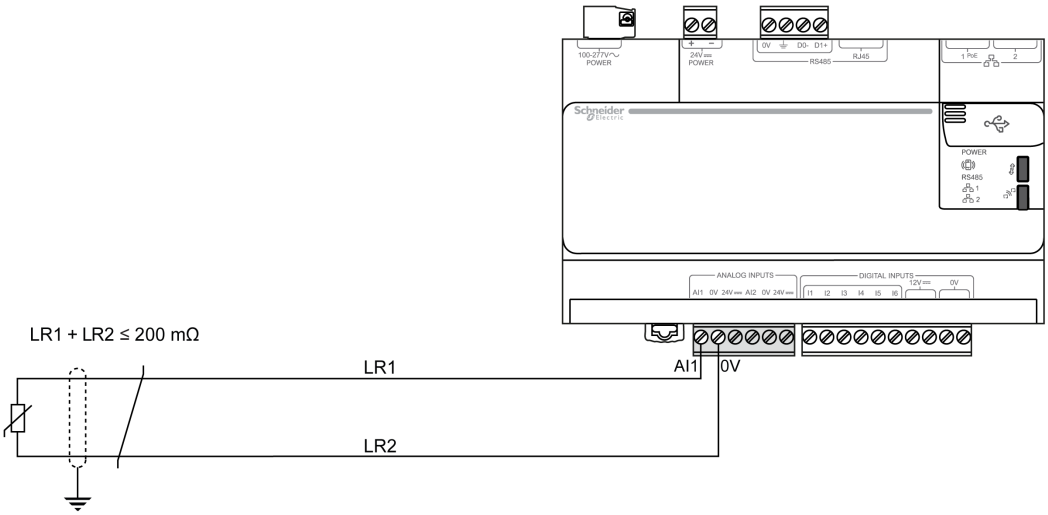
This chapter contains the following topics:

Topic	Page
Pt100 / Pt1000	104
CWE CO2 Sensor 0–10 V and 4–20 mA	105
SHO100 and SHR100 Humidity Sensor 0–10 V and 4–20 mA	106
STD300 and STO300 4–20 mA Temperature Sensors	108

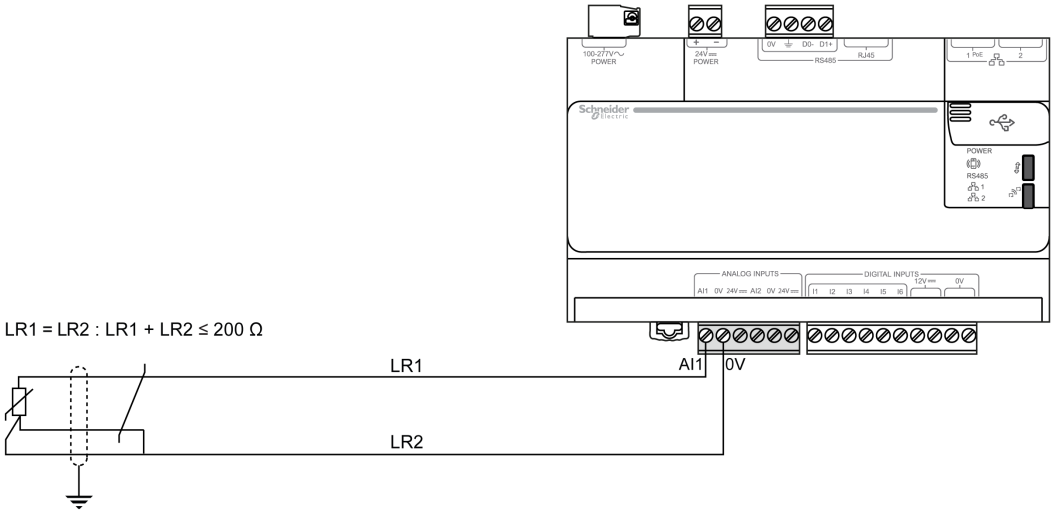
Pt100 / Pt1000

Wiring Diagram

2 wires direct connection to the Com'X 200:



3 wires direct connection to the Com'X 200:

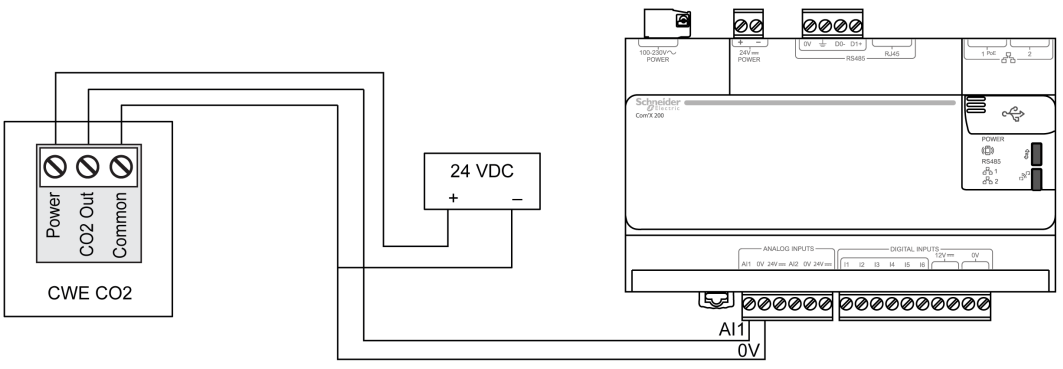


CWE CO2 Sensor 0–10 V and 4–20 mA

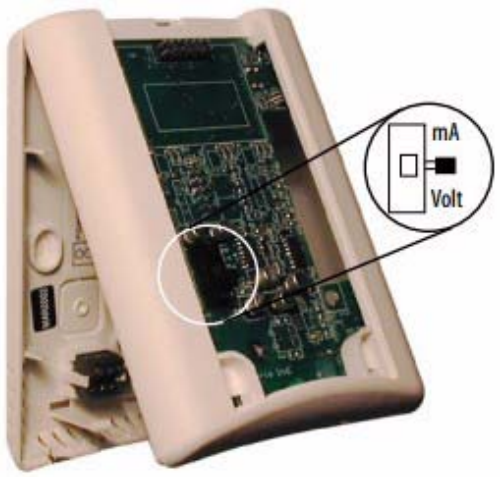
CWE CO2 Sensor 0–10 V and 4–20 mA Wiring Diagram

The wiring diagram is the same for both 0–10 V and 4–20 mA. You have to set the configuration switch of the sensor in the appropriate position to select the 0–10 V or 4–20 mA functioning mode.

CO2 sensor wiring diagram to Com'X 200:



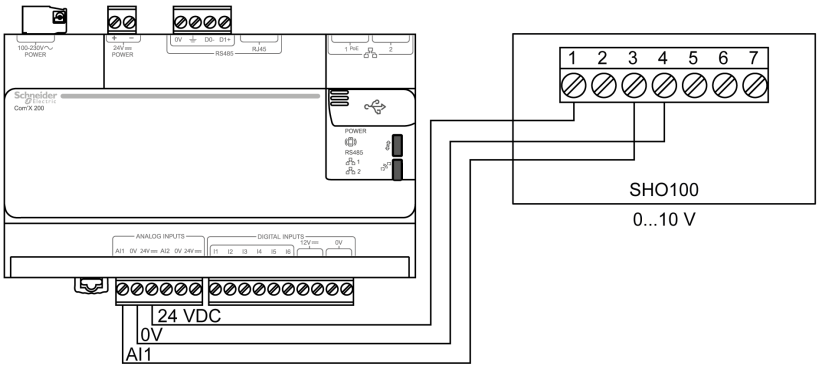
CO2 sensor 0–10 V or 4–20 mA switch position:



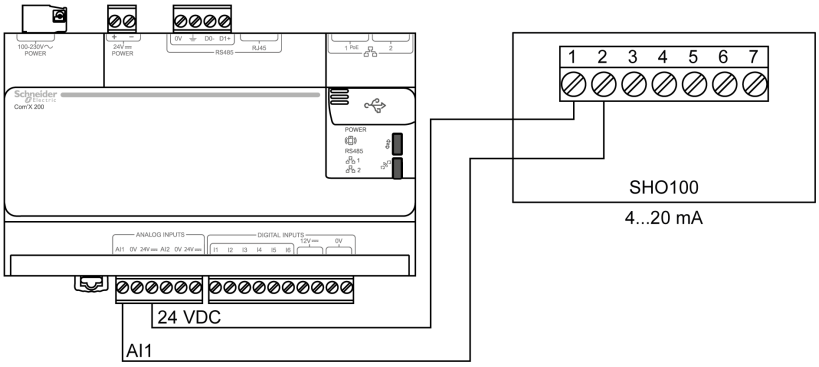
SHO100 and SHR100 Humidity Sensor 0–10 V and 4–20 mA

SHO100 Humidity Sensor 0–10 V and 4–20 mA Wiring Diagram

SHO100 humidity sensor wiring diagram to the Com'X 200 in 0–10 V configuration:



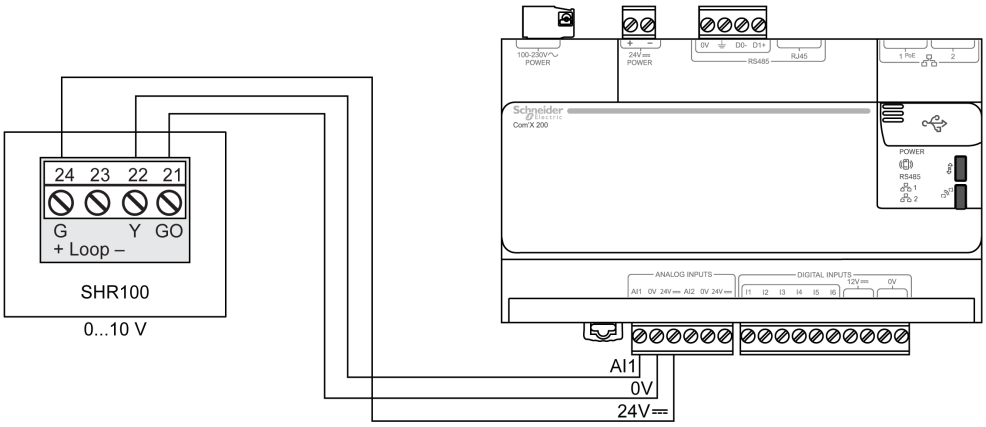
SHO100 humidity sensor wiring diagram to the Com'X 200 in 4–20 mA configuration:



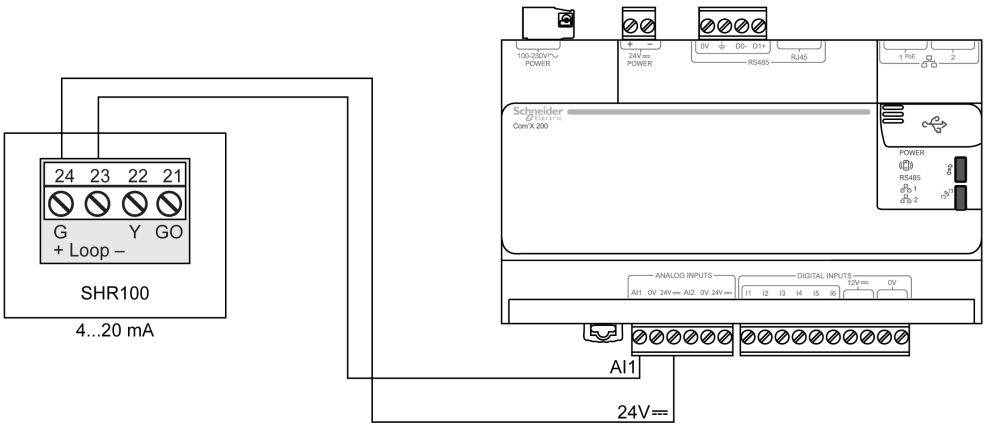
SHR100 Humidity Sensor 0–10 V and 4–20 mA Without External Power Supply Wiring Diagram

You have to set the configuration switch of the sensor in the appropriate position to select the 0–10 V or 4–20 mA functioning mode.

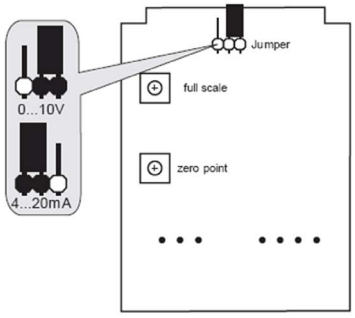
SHR100 humidity sensor wiring diagram to the Com'X 200 in 0–10 V configuration:



SHR100 humidity sensor wiring diagram to the Com'X 200 in 4–20 mA configuration:



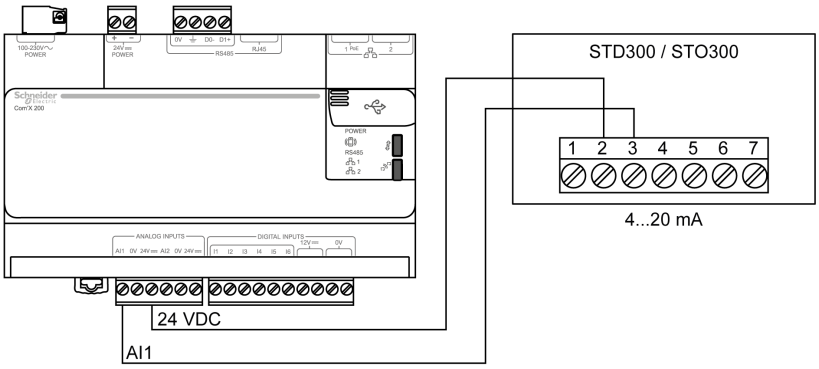
SHR100 humidity sensor 0–10 V or 4–20 mA switch position:



STD300 and STO300 4–20 mA Temperature Sensors

STD300 and STO300 Temperature Sensors 4–20 mA Wiring Diagram

STD300 and STO300 temperature sensor wiring diagram to the Com'X 200.



Chapter 12
Wiring Converters

Safety Instruction

⚠ ⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.
- Turn off all power supplying this device before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Do not exceed the device's ratings for maximum limits.

Failure to follow these instructions will result in death or serious injury.

NOTE: Refer to the manufacturer's documentation for each device for complete installation instructions.

What Is in This Chapter?

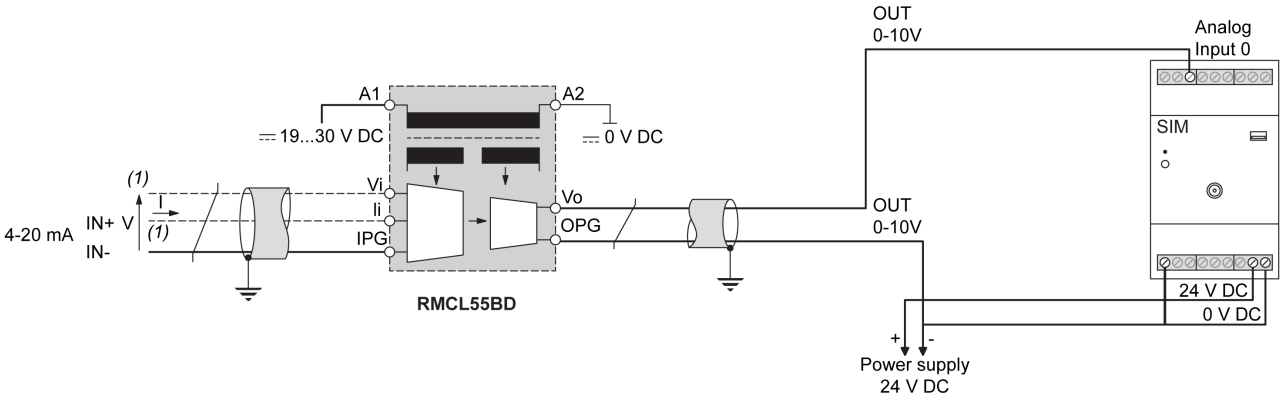
This chapter contains the following topics:

Topic	Page
4–20 mA to 0–10 V Zelio Converter (RMCL55BD)	110
Temperature Pt100 to 0–10 V Zelio Converter (RMPT13BD)	111
Temperature Pt100 to 0–10 V Converter (88 950 1••)	112
STAHL Interface for Gas Meter (9001/01-252-057-141)	113

4–20 mA to 0–10 V Zelio Converter (RMCL55BD)

Wiring Diagram

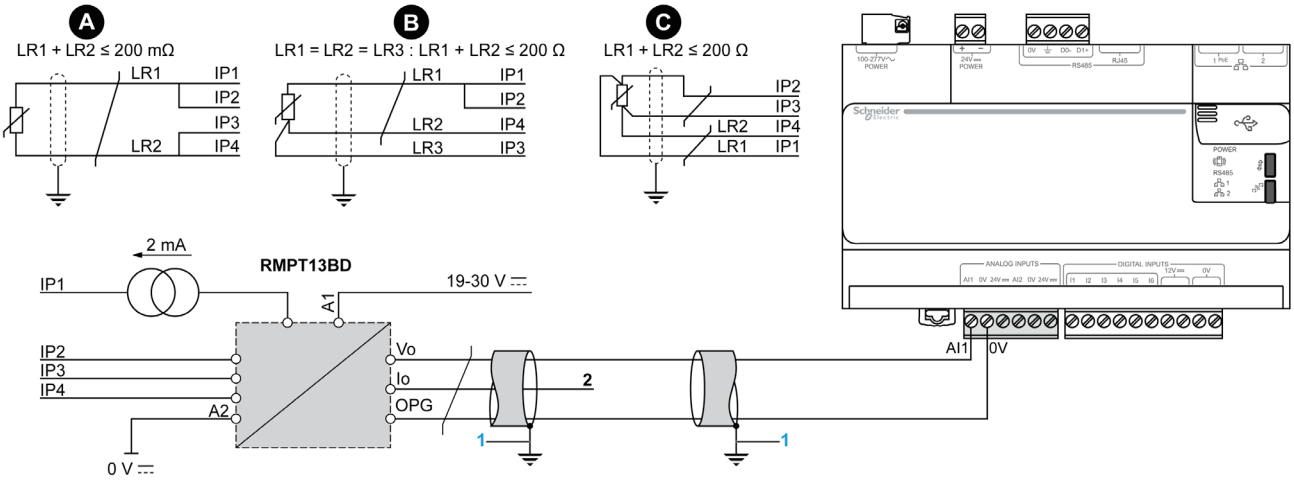
Zelio converter connection to SIM10M:



Temperature Pt100 to 0–10 V Zelio Converter (RMPT13BD)

Wiring Diagram

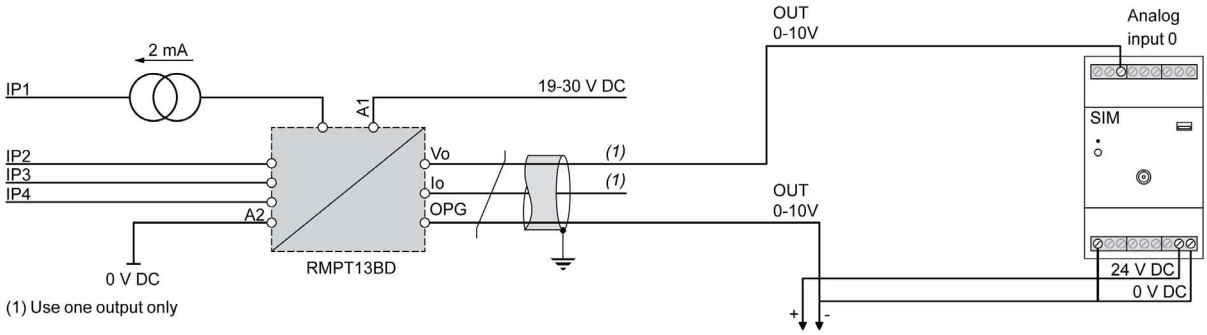
Electrical connection to the Com'X 200:



A 2 wires connection type
B 3 wires connection type
C 4 wires connection type

Grounding shield (**1**): if the current circulating in the shield is higher than 100 mA, the shield has to be grounded at only 1 end. Otherwise, il has to be grounded at both ends.

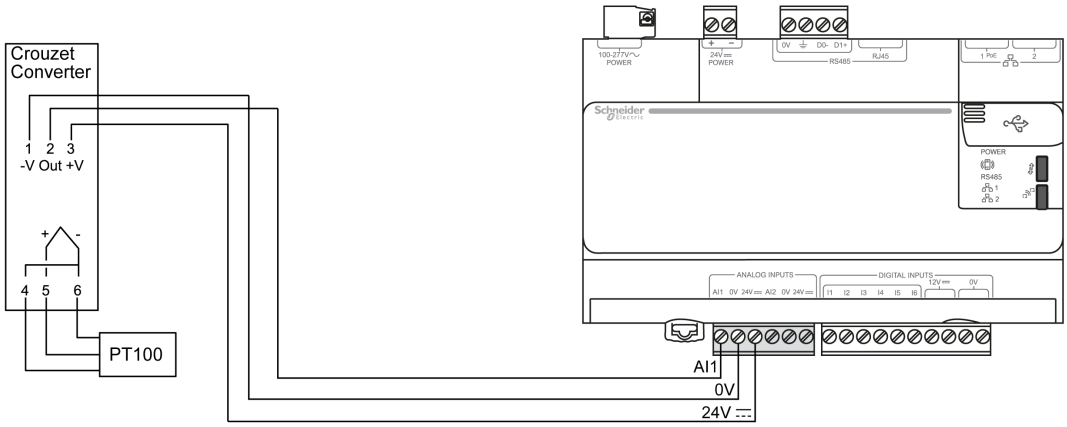
Electrical connection to SIM10M:



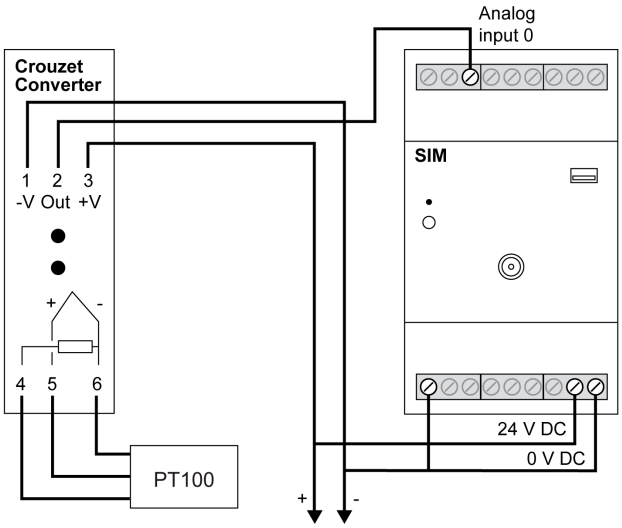
Temperature Pt100 to 0–10 V Converter (88 950 1••)

Wiring Diagram

Electrical connection to the Com'X 200:



Electrical connection to SIM10M:



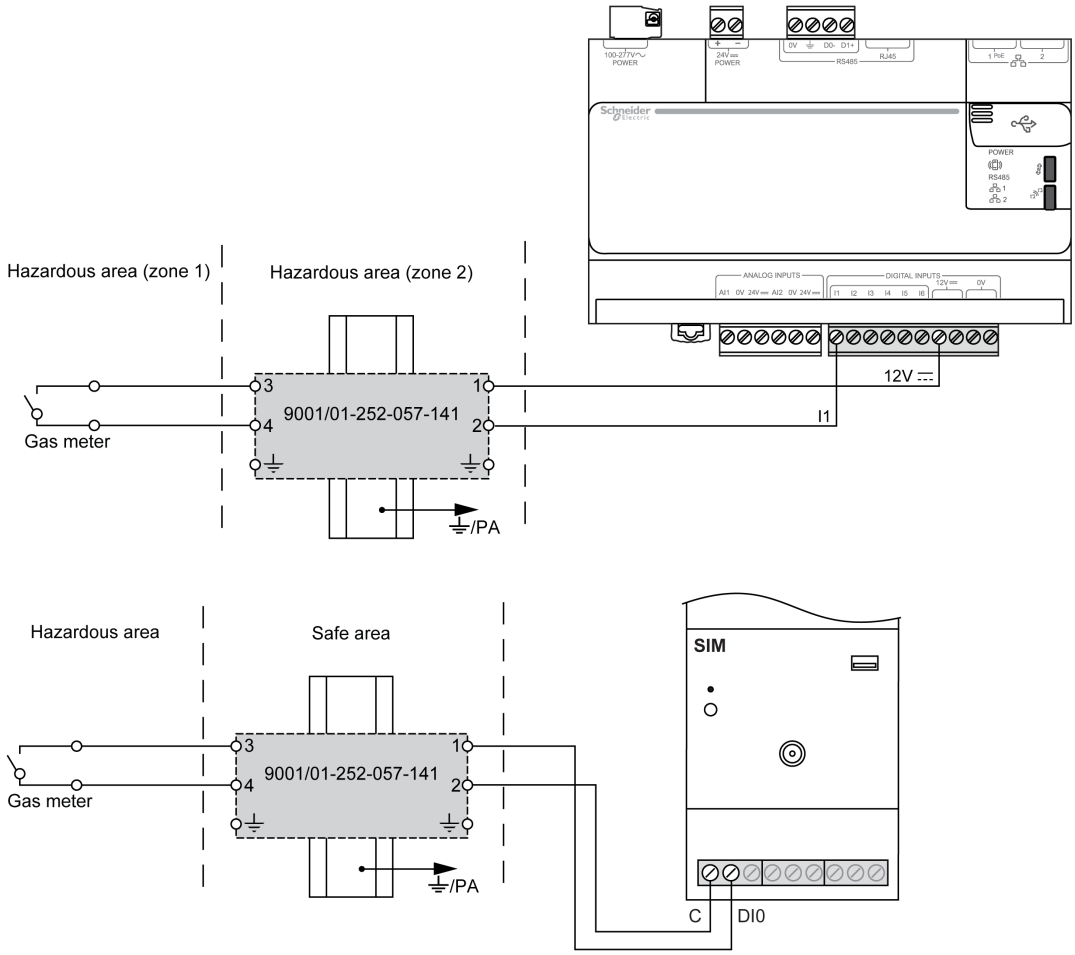
STAHL Interface for Gas Meter (9001/01-252-057-141)

Overview

The wiring of the interface for gas meter requires specific wiring instructions depending on the hazardous areas standard you wish to follow. Refer to the ATEX, NFPA 70, Article 504 or ANSI/ISA-12.01.01 standards for more information about hazardous areas requirements.

Wiring Diagram

Wiring example for the ATEX standard in a hydrocarbon gas environment (methane, butane, propane):



Appendices

Appendix A
Appendices

Troubleshooting List for Com'X 200

Troubleshooting

Troubleshooting table

If...	Then ...
The Com'X 200 does not appear in the list of devices of the explorer	Check that there is no router between the Com'X 200 and the computer.
The login page does not correctly open in the Internet browser	Check that your browser has a version level equal to or higher than the following versions: ● Internet Explorer 8 ● Mozilla Firefox 15 ● Chrome 24 In Internet Explorer, open the **Compatibility view settings** window in the **Tools** menu, and check that the **Display internal sites in compatibility view** checkbox is unchecked.

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As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

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